Appendix B
Air Quality Analysis

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HACIENDA AT FAIRVIEW VALLEY
AIR QUALITY IMPACT ANALYSIS
COUNTY OF SAN BERNARDINO, CALIFORNIA

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

This analysis is intended to determine the potential impacts to air quality associated with the development of the proposed Hacienda at Fairview Valley project. The proposed development is located in unincorporated San Bernardino County within the Town Apple Valley Sphere of Influence, east of Laguna Seca Drive and bisected by Cahuilla Road. The project is proposed to include a maximum of 299 dwelling units of single family housing, 2,815 dwelling units of senior (active) adult housing, and 15 acres (up to 200,000 square feet) of neighborhood/community commercial retail center uses, and various parks/open space on 1,557 acres.

Specifically, this air quality analysis will evaluate the potential air quality impacts associated with the development (i.e. construction and operations) of the proposed project. The analysis will also consider emissions of greenhouse gases resulting from project construction and operation. Lastly, emissions reduction measures will be identified to reduce the potential for significant air quality impacts due to short-term construction and long-term operational activity of the project.

1.2 Air Quality Setting

The project site is located in the Mojave Desert Air Basin (MDAB) within the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). The Basin encompasses the eastern portion of Riverside County consisting of the Palo Verde Valley along with portions of Los Angeles, Kern and San Bernardino Counties.

The nearest long-term air quality monitoring site in relation to the project for Ozone (O_3), Carbon Monoxide (CO), Nitrogen Dioxide (NO_2), Inhalable Particulates (PM_{10}), and Ultra-Fine Particulates ($PM_{2.5}$) is carried out by the Mojave Desert Air Quality Management District (MDAQMD) at the Victorville monitoring station located approximately 12 miles southwest of the

project site. It should be noted that data for SO_2 has been omitted as attainment is regularly met in the Mojave Desert Air Basin and few monitoring stations measure SO_2 concentrations.

Examples of sources and effects of the pollutants previously discussed are identified below:

- Carbon Monoxide (CO): Carbon monoxide is a colorless, odorless, tasteless and toxic gas resulting from the incomplete combustion of fossil fuels. CO interferes with the blood's ability to carry oxygen to the body's tissues and results in numerous adverse health effects. CO is a criteria air pollutant.

- Oxides of Sulfur (SO_x): Typically strong smelling, colorless gases that are formed by the combustion of fossil fuels. SO_2 and other sulfur oxides contribute to the problem of acid deposition. SO_2 is a criteria pollutant.

- Nitrogen Oxides (Oxides of Nitrogen, or NO_x): Nitrogen oxides (NO_x) consist of nitric oxide (NO), nitrogen dioxide (NO_2) and nitrous oxide (N_2O) and are formed when nitrogen (N_2) combines with oxygen (O_2). Their lifespan in the atmosphere ranges from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid deposition. NO_2 is a criteria air pollutant, and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility.

- Ozone (O_3): A strong smelling, pale blue, reactive toxic chemical gas consisting of three oxygen atoms. It is a product of the photochemical process involving the sun's energy. Ozone exists in the upper atmosphere ozone layer as well as at the earth's surface. Ozone at the earth's surface causes numerous adverse health effects and is a criteria air pollutant. It is a major component of smog.

- PM_{10} (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health effects. PM_{10} also causes visibility reduction and is a criteria air pollutant.

- $PM_{2.5}$ (Particulate Matter less than 2.5 microns): A similar air pollutant consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include sulfates formed from SO2 release from power plants and industrial facilities and nitrates that are formed from NOx release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions.

- Volatile Organic Compounds (VOC): Volatile organic compounds are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form ozone to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include: carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.
- Reactive Organic Gasses (ROG): Similar to VOC, Reactive Organic Gasses (ROG) are also precursors in forming ozone and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight.

The EPA (under the Federal Clean Air Act of 1970, and amended in 1977) established ambient air quality standards for these pollutants. This standard is called the National Ambient Air Quality Standards (NAAQS). The California Air Resources Board (CARB) subsequently established the more stringent California Ambient Air Quality Standards (CAAQS). Both sets of standards are shown in Table 3-1 (presented later in this report). Areas in California where ambient air concentrations of pollutants are higher than the state standard are considered to be in “non-attainment” status for that pollutant.

1.3 Summary of Findings

The results of the analysis indicate that during short-term construction, even with implementation of the recommended mitigation measures, emissions of NO_X and PM_{10} cannot be reduced to levels below the significance thresholds established by the MDAQMD.

For long-term operational activities, even with implementation of the recommended mitigation measures, emissions of VOCs, NO_X, CO, PM_{10}, and $PM_{2.5}$ cannot be reduced to levels below the significance thresholds established by the MDAQMD. The results of the analysis support the following conclusions:

- The project is not in compliance with the applicable Air Quality Management Plan;
- The project-generated emissions have the potential to violate Federal or State ambient air quality standards;
- The project's contribution to cumulative impacts is cumulatively considerable;
- The project does not have the potential to expose sensitive receptors to substantial pollutant concentrations;
- Project-generated odors will not affect a substantial number of people; and
- The project is not expected to result in a significant impact on global climate change.

1.4 Standard Regulatory Requirements

MDAQMD Rules that are currently applicable during construction include: Regulation XI (Source Specific Standards); Rule 1103 (Cutback and Emulsified Asphalt); Rule 1113 (Architectural Coatings); and Regulation IV (Prohibitions); and Rule 403.2 (Fugitive Dust Control for the Mojave

Desert Planning Area). The specific Rule 403.2 regulatory requirements applicable to this project are summarized in Appendix "E".

Additionally, The California Air Resources Board, in Title 13, Chapter 10, Section 2485, Division 3 of the California Code of Regulations, imposes a requirement that heavy duty trucks accessing the site shall not idle for greater than five minutes.

1.5 Construction Activity Recommended Mitigation Measures

Recommended emissions reduction measures to help reduce construction air quality impacts include:

- The applicant shall minimize pollutant emissions by maintaining equipment engines in good condition and in proper tune according to manufacturer's specifications and during smog season (May through October) by not allowing construction equipment to be left idling for more than five minutes (per California law). Prior to the issuance of grading permits, signs shall be posted at the construction site reminding workers of the five-minute idling rule. Additionally, during maintenance, precautions shall be taken to ensure that fuel is not leaked onto the ground. Equipment maintenance records and equipment design specification data sheets shall be kept onsite during construction and subject to inspection by the SCAQMD or public works director. *As a conservative measure, no reduction was taken in this analysis for the use of properly timed and tuned equipment;*

- Prior to the construction of the project, the project proponent shall provide a Fugitive Dust Control Plan that describes the application of Best Management Practices (BMPs) to control fugitive dust during construction. BMP's shall include but should not be limited to:

    - The applicant shall use periodic watering for short-term stabilization of disturbed surface area and haul roads to minimize visible fugitive dust emissions. Watering, with complete coverage, shall occur at least three times a day, preferably in the mid-morning, afternoon and after work is done for the day. Implementation of this measure is estimated to reduce PM_{10} and $PM_{2.5}$ fugitive dust emissions by approximately 61%;

- The applicant shall take actions sufficient to prevent project-related trackout onto paved surfaces and shall cleanup project-related trackout or spills on publicly maintained paved surfaces at the end of each day;

- The applicant shall stabilize graded site surfaces upon completion of grading when subsequent development is delayed or expected to be delayed more than thirty days, except when such a delay is due to precipitation that dampens the disturbed surface sufficiently to eliminate visible fugitive dust emissions;

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 15 mph averaged over a one-hour duration;

- Contractor shall ensure use of low-sulfur diesel fuel in construction equipment as required by the California Air Resources Board (CARB) (diesel fuel with sulfur content of 15 ppm by weight or less). Prior to the issuance of grading permits, the applicant shall provide documentation to the County that verifies that certain equipment are exempt; that a low-sulfur diesel supply has been secured; and that the construction contractor is aware that the use of low-sulfur diesel is required. *As a conservative measure, no reduction was taken in this analysis for the use of low-sulfur diesel fuel;*

- Contractor shall ensure that all off-road heavy-duty construction equipment utilized during construction activity will be CARB Tier II Certified or better (to the maximum extent feasible). Prior to the issuance of grading permits, the applicant shall provide documentation to the County that verifies that certain equipment is not available as CARB Tier II certified; that applicable CARB Tier II certified equipment has been secured; and that the construction contractor is aware that the use of CARB Tier II Certified equipment is required. Implementation of this measure is estimated to reduce emissions of VOCs, NO_X, PM_{10}, and $PM_{2.5}$ by approximately 78.31%, 54.57%, 54.82%, and 50.43%, respectively;

- Contractor shall utilize existing power sources (e.g., power poles) or clean-fuel generators rather than temporary power generators where feasible. *As a conservative measure, no reduction was taken in this analysis for the use of existing power sources;*

- During construction of the proposed project, only low-VOC paints and coatings as defined in MDAQMD Rule 1113 shall be used. Prior to the issuance of building permits, the applicant shall provide documentation to the County that verifies coatings as defined in MDAQMD Rule 1113 have been secured; and that the construction contractor is aware that the use of low-VOC paints and coatings is required.

1.6 Specific Plan Goals

The proposed project provides for a mixed-use, pedestrian friendly environment with access to a variety of transportation options, including walking, biking, public transit, or car.

The Specific Plan for the proposed project creates a regulatory framework which focuses on "Green Development". The Green Development Goals and Efficiency Provisions contained in the Specific Plan, and summarized below, are intended to result in a superior community development which reduces greenhouse gas emissions and conserves water and energy resources, as consistent with the California Global Warming Solutions Act (AB32).

Four Green Development goals are incorporated to guide the implementation of the Specific Plan towards the Green Development principle:

- Land Use Efficiency: Seeks to respect the natural site, increase land use efficiency, reduce greenhouse gas emissions, and increase public health of residents and surrounding neighborhoods.
- Transportation Efficiency: Seeks to increase overall transportation system efficiency, reduce greenhouse gas emissions and decrease demand for gasoline powered vehicles.
- Water Efficiency: Seeks to increase water use efficiency and decrease water use demand.
- Energy Efficiency: Seeks to increase the use of renewable energy sources, increase energy efficiency, reduce greenhouse gas emissions, and decrease energy demand.

These goals will be achieved through the Specific Plan regulations which govern the design and implementation of land use patterns, infrastructure, buildings, energy systems, landscapes, and

other features at the project site. The Specific Plan provisions are presented, in detail, in Appendix "F".

1.7 Specific Plan Requirements

The following project design features will be implemented by the project as required by the Specific Plan:

- Placement of neighborhood commercial, recreation areas, and public safety near residential uses in order to reduce vehicle miles traveled and reduce the number of vehicle trips through on-site improvements such as sidewalks or pedestrian walkways to promote pedestrian and bicycle activity.

- Encourage the use of Neighborhood Electric Vehicles (NEVs) to access recreational and commercial areas through the establishment of maximum speed limits on all private streets.

- Designate multiple transit stops throughout the site in order to service future public transportation routes.

- Encourage pedestrian and bicycle activity by providing open pedestrian access to an adjacent street's sidewalk for the majority of local cul-de-sac streets.

- Increase water use efficiency and decrease water use demand through the following improvements:

    - Require a minimum of 90% of all non-turf planting areas in common areas and street right of ways to utilize drought tolerant and/or native plant materials.
    - Establish a maximum percentage of turf grass coverage in common areas and residential front yards for lots ¾ acre and larger (19% max) and less than ¾ acre (28% max).
    - Eliminate "non-functional" turf grass coverage allowed in recreation areas.
    - Provide a wastewater treatment system which reuses reclaimed water to irrigate common area and street right of way landscape.

- Require micro-irrigation systems for watering of plants within common areas and street right of ways.
- Implementation of Specific Plan Design Guidelines to strongly encourage incorporation of water saving features and technologies within residential and commercial buildings.
- Provide community pool(s) at the community recreation areas within convenient distance from the majority of active adult homes to reduce the need for private pools at individual homes and thus decrease supplemental water requirements at individual lots.
- Low flow faucets as well as high-efficiency toilets shall be installed in restrooms.

- Reduce energy requirements through implementation of the following community features:
  - Establishment of a "dark sky" policy which limits street lighting and thereby the electricity requirements to decision making points (e.g., street intersections), night-use recreation areas or where County public safety officials deem them necessary.
  - Provide community pool(s) at the community recreation areas within convenient distance from the majority of active adult homes in order to reduce the need for private pools at individual homes thereby decreasing pool equipment energy requirements at individual lots.

- Construction of buildings that exceed minimum statewide energy requirements 15% beyond Title 24; this may include, but is not limited to:
  - Require that a minimum of 25% of the total residential units constructed within the Specific Plan Area shall be powered primarily by solar energy
  - Encourage home orientation with the majority of window areas facing due north and south, by designing local streets in a predominantly east-west direction, to minimize transfer of heat generated by early morning and late afternoon summer sunlight through windowed surfaces. Conversely in the winter, exposed windows on the southern side of a home take advantage of the natural heating and lighting effects of the low sun position.
  - Use of low emission water heaters
  - Use of central water heating systems

- Use of energy efficient appliances
- Use of increased insulation
- Use of automated controls for air conditioners
- Use of energy-efficient parking lot lights
- Use of lighting controls and energy-efficient lighting

2.0 INTRODUCTION

2.1 Purpose of Report

The purpose of this report is to evaluate the air quality impacts resulting from the proposed project. This initial section of the air quality impact analysis report describes the project and summarizes the atmospheric setting within the study area. Subsequent sections of the report describe the existing air quality setting for the study area; evaluate the project air quality impacts, and present recommended emissions reduction measures that should be implemented in conjunction with the proposed project.

2.2 Site Location

The project site is located east of Laguna Seca Drive and bisected by Cahuilla Road. Exhibit 2-A illustrates the location of the project site within the study area.

2.3 Existing Land Use

The majority of the project site is currently vacant and zoned RL-5 (Rural Living). Portions of the project site are currently zoned RL-20 and RL-40. Adjacent land uses include the following:

North – Vacant
South – Vacant / Residential
East – Vacant
West – Vacant

2.4 Proposed Land Use and Zoning

The proposed project is to be developed in two overall phases with multiple subphases, as analyzed in the project traffic study. Phase 1 (interim) includes the development of Village A and Village B, and Phase 2 (buildout) includes the development of Village C and Village D. It should be noted that for purposes of this study, four phases of project construction have been analyzed. The four phases of project construction are considered to be consistent with market absorption of each

village within the Specific Plan Land Use Plan. These four phases of project construction do not correspond to the two operational phases (interim and buildout) as analyzed in the project traffic study. The proposed land uses to be developed in each village are as follows:

Land Use by Village		
Village	**Land Use**	**Quantity**
A	Single Family Detached	55 DU
	Senior Adult Housing	1,349 DU
	Shopping Center	200 TSF
B	Single Family Detached	74 DU
	Senior Adult Housing	224 DU
C	Single Family Detached	98 DU
	Senior Adult Housing	545 DU
D	Single Family Detached	72 DU
	Senior Adult Housing	697 DU

DU = Dwelling Units
TSF = Thousand Square Feet

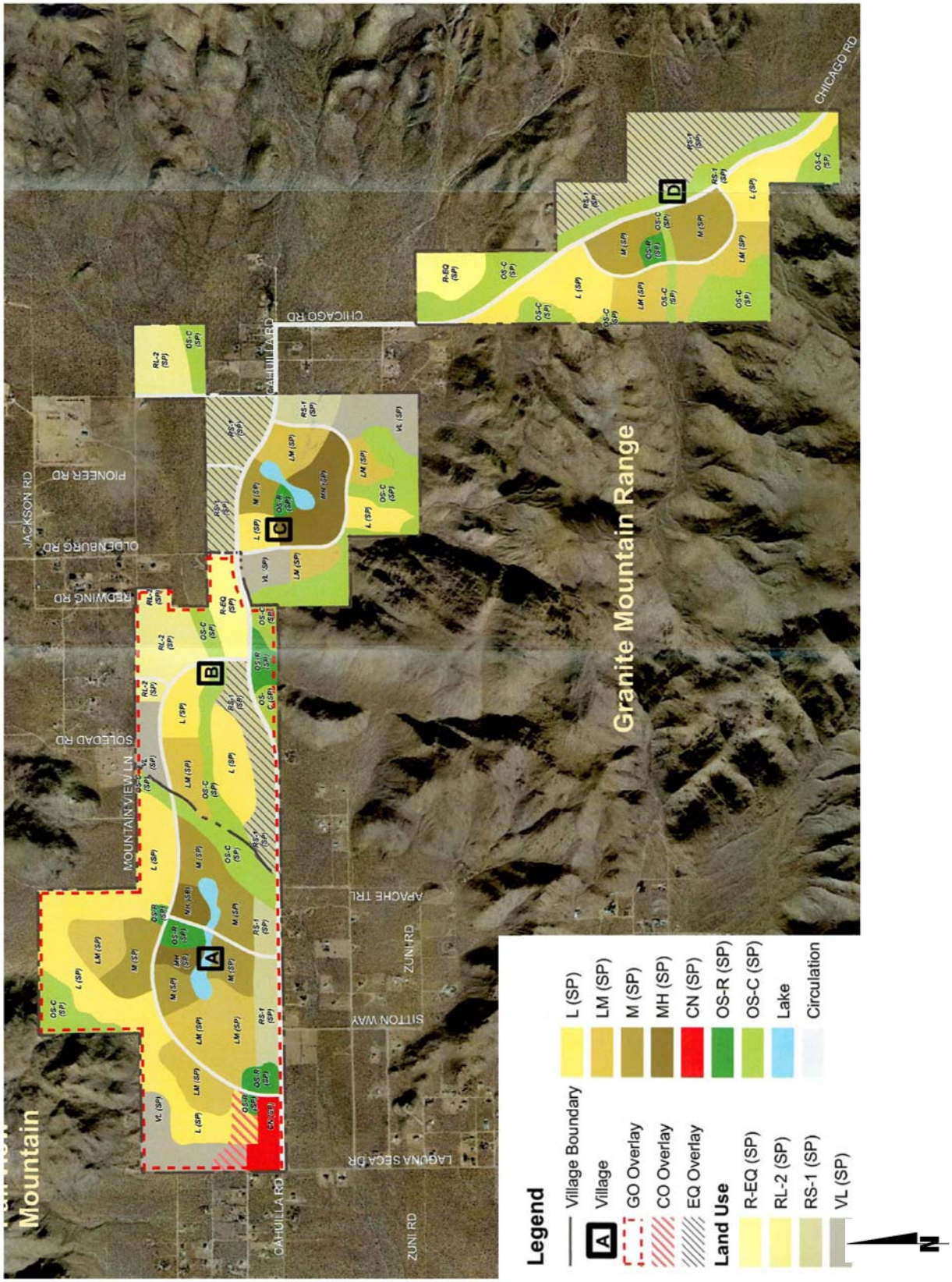
Phase 1 is anticipated to be developed by 2020 and Phase 2 is anticipated to be developed by 2030. The proposed project is not consistent with currently adopted County of San Bernardino zoning, and proposes a more dense land use than is currently zoned for the project site. The project site plan is presented in Exhibit 2-B.

EXHIBIT 2-A

LOCATION MAP

EXHIBIT 2-B

SITE PLAN



3.0 EXISTING CONDITIONS

3.1 Mojave Desert Air Basin

The project site is located in the Mojave Desert Air Basin (MDAB) within the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). The MDAB is comprised of 21,000 square miles and is the largest air basin in California. It encompasses the eastern portion of Riverside County consisting of the Palo Verde Valley along with portions of Los Angeles, Kern and San Bernardino Counties.

The MDAB is separated from the southern California coastal and central California Valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses. The Antelope Valley is bordered in the northwest by the Tehachapi Mountains, separated from the Sierra Nevadas in the north by the Tehachapi Pass (3,800 ft elevation). The Antelope Valley is bordered in the south by the San Gabriel Mountains, bisected by Soledad Canyon (3,300 ft). The Mojave Desert is bordered in the southwest by the San Bernardino Mountains, separated from the San Gabriels by the Cajon Pass (4,200 ft). A lesser channel lies between the San Bernardino Mountains and the Little San Bernardino Mountains, the Morongo Valley. The Palo Verde Valley portion of the Mojave Desert lies in the low desert, at the eastern end of a series of valleys (notably the Coachella Valley) whose primary channel is the San Gorgonio Pass (2,300 ft) between the San Bernardino and San Jacinto Mountains (MDAQMD CEQA Guidelines).

3.2 Regional Climate

The regional climate significantly influences the air quality in the Basin. In addition, the temperature, wind, humidity, precipitation, and amount of sunshine influence the air quality. The MDAB is classified as a dry-hot desert climate, with portions classified as dry-very hot desert. Average summer high temperatures in the project vicinity are approximately 93 degrees Fahrenheit (˚F). Average winter low temperatures are approximately 30˚F. The average annual rainfall in the project vicinity is approximately 6.0 inches annually (http://countrystudies.us/united-states/weather/California/victorville.htm).

During the summer the MDAB is generally influenced by a Pacific Subtropical High cell that sits

off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time the reach the desert. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south. The MDAB averages between three and seven inches of precipitation per year (MDAQMD CEQA Guidelines).

The importance of wind to air pollution is considerable. The direction and speed of the wind determines the horizontal dispersion and transport of the air pollutants. The MDAB consists of an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains that dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are generally out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada Mountains to the north. Air masses pushed onshore in Southern California by differential heating are channeled through the MDAB. (City of Blythe General Plan 2025, January 2007).

3.3 Wind Patterns and Project Location

The distinctive climate of the project area and the MDAB is determined by its terrain and geographical location. The Basin is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes.

Wind patterns across the region are characterized by westerly and southwesterly on-shore winds. These prevailing winds are due to the proximity of the MDAB to coastal and and central regions and blocking nature of the Sierra Nevada mountains to the north. As a result, air masses pushed onshore in Southern California by differential heating are channeled through the MDAB.

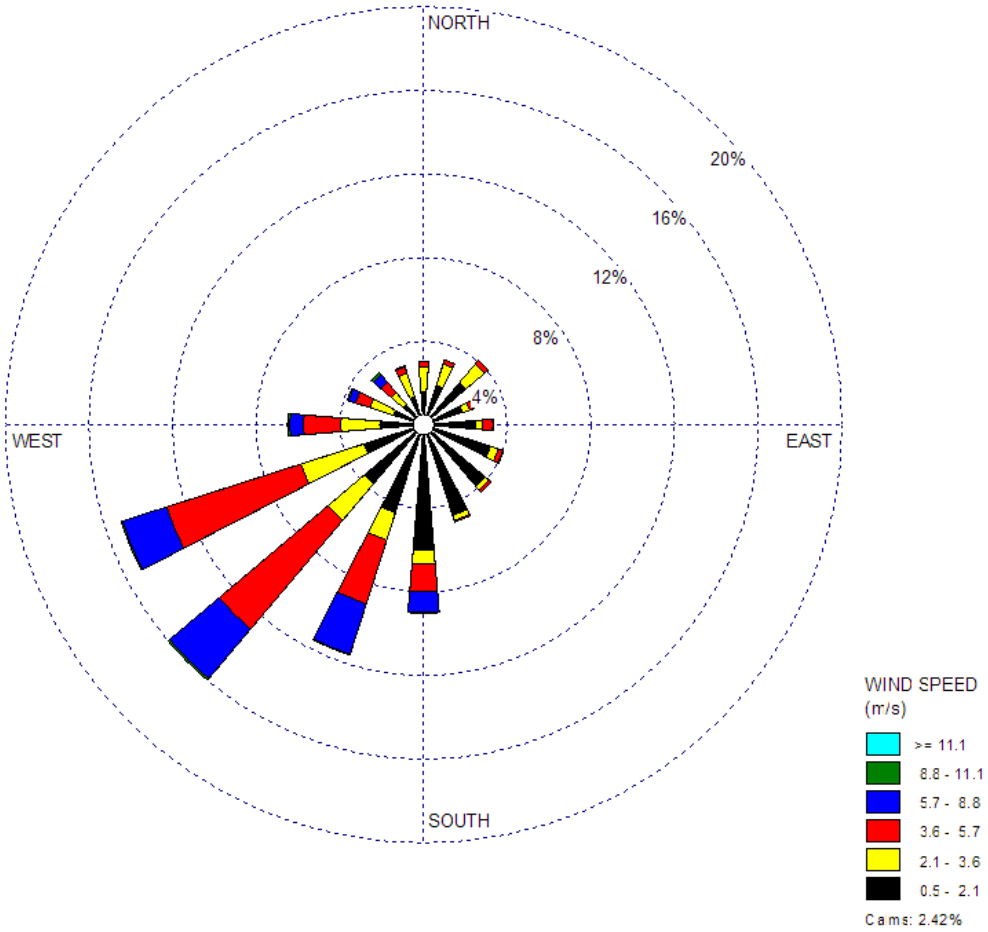
The prevailing winds in the project area move predominately from the northwest to the southeast with an average wind speed of 2.91 meters per second (m/s). A Windrose exhibit is available below and shows prevailing wind patterns and average speed in the project area.

EXHIBIT 3-A

WIND ROSE

WIND ROSE PLOT:
Victorville Monitoring Station

DISPLAY:
Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	1995 Jan 1 - Dec 31 00:00 - 23:00	**Urban Crossroads, Inc.**	
		MODELER: **M. T.**	URBAN CROSSROADS
	CALM WINDS: **2.42%**	TOTAL COUNT: **8760 hrs.**	
	AVG. WIND SPEED: **2.91 m/s**	DATE: **5/1/2008**	PROJECT NO.:

WRPLOT View - Lakes Environmental Software

Meteorological data from the Victorville monitoring station (located approximately 12 miles southwest of the project site) was used to be representative of the project area. Meteorological data was available for use by CARB on their website (http://www.arb.ca.gov/toxics/harp/metfiles.htm).

3.4 Existing Air Quality

Existing air quality is measured based upon ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. Those standards currently in effect for both California and federal air quality standards are shown in Table 3-1.

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state standards and federal standards presented in Table 3-1. The air quality in a region is considered to be in attainment if the measured ambient air pollutant levels for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, and PM_{10} are not exceeded and all other standards are not equaled or exceeded at any time in any consecutive three-year period; and the federal standards (other than O_3, PM_{10}, and those based on annual averages or arithmetic mean) are not exceeded more than once per year. The O_3 standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. See Table 3-2 for attainment designations.

3.5 Regional Air Quality

The MDAQMD gathers a variety of air quality data from a variety of monitoring sites. No areas of the Basin exceeded federal or state standards for NO_2, SO_2, CO, sulfates or lead.

TABLE 3-1

AMBIENT AIR QUALITY STANDARDS[1*]

Pollutant	Averaging Time	California Standards		Federal Standards			Most Relevant Effects
		Concentration	Method	Primary	Secondary	Method	
Ozone (O_3)	1 Hour	0.09 ppm (180 μg/m^3)	Ultraviolet Photometry	-	Same as Primary Standard	Ultraviolet Photometry	(a) Short-term exposures: (I) Pulmonary function decrements and localized lung edema in humans and animals. (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
	8 Hour	0.070 ppm (137 μg/m^3)		0.075 ppm (157 μg/m^3)			
Respirable Particulate Matter (PM_{10})	24 Hour	50 μg/m^3	Gravimetric or Beta Attenuation	150 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis	(a) Excess deaths for short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children; (c) Increased risk of premature death from heart or lung diseases in elderly
	Annual Arithmetic Mean	20 μg/m^3		-			
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		35 μg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis	
	Annual Arithmetic Mean	12 μg/m^3	Gravimetric or Beta Attenuation	15 μg/m^3			
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)			
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		-	-	-	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 μg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 μg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
	1 Hour	0.18 ppm (339 μg/m^3)		-			
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	-	Ultraviolet Fluorescence	0.030 ppm (80 μg/m^3)	-	Spectrophotometry (Pararosaniline Method)	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma.
	24 Hour	0.04 ppm (105 μg/m^3)		0.14 ppm (365 μg/m^3)	-		
	3 Hour	-		-	0.5 ppm (1300 μg/m^3)		
	1 Hour	0.25 ppm (655 μg/m^3)		-	-	-	
Lead	30 Day Average	1.5 μg/m^3	Atomic Absorption	-	-	-	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
	Calendar Quarter	-		1.5 μg/m3	Same as Primary Standard	High Volume Sampler and Atomic Absorption	
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer - visbility of ten miles or more (0.07 - 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and transmittance through Filter Tape		No Federal Standards			Visibility impairment on days when relative humidity is less than 70 percent
Sulfates	24 Hour	25 μg/m^3	Ion Chromatography				(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) property damage
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m^3)	Ultraviolet Fluorescence				
Vinyl Chloride	24 Hour	0.01 ppm (26 μg/m^3)	Gas Chromatography				

[1]Source: California Air Resources Board (6/26/08)

* For reader's convenience in picking out standards quickly, concentration appears first; e.g. "0.12 ppm, 1-hr avg.>" means 1hr-avg. > 0.12ppm.

**There is no separate 24-hour PM 2.5 standard in California; however, the U.S. EPA promulgated a 24-hour PM 2.5 ambient air quality standard of 35 μg/m3.

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TABLE 3-2

ATTAINMENT STATUS

Criteria Pollutant	State Designation	Federal Designation
Ozone - 1hour standard	Nonattainment	Revoked June 2005
Ozone - 8 hour standard	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment[a]
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	Attainment	Attainment
All others	Attainment/Unclassified	Attainment

Source: California Air Resources Board, Attainment Designation Fact Sheets, January 2006

[a] The USEPA granted the request to redesignate the SCAB from nonattainment to attainment for the CO NAAQS on May 11, 2007 (Federal Register Volume 71, No. 91), which became effective as of June 11, 2007

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The MDAQMD is charged with developing air quality attainment plans for the MDAB, for inclusion into California's State Implementation Plan (SIP), additionally the air quality attainment plans are sought to establish and enforce air pollution control rules and regulations.

The MDAQMD currently has two adopted plans in effect to address O_3 and PM_{10}: *MDAQMD 2004 Ozone Attainment Plan (State and Federal, 2004), Final Mojave Desert Planning Area Federal Particulate Matter (PM_{10}) Attainment Plan (1995).*

3.6 Local Air Quality

The nearest long-term air quality monitoring site in relation to the project for Ozone (O_3), Carbon Monoxide (CO), Nitrogen Dioxide (NO_2), Inhalable Particulates (PM_{10}), and Ultra-Fine Particulates ($PM_{2.5}$) is carried out by the Mojave Desert Air Quality Management District (MDAQMD) at the Victorville monitoring station located approximately 12 miles southwest of the project site. The 3 years of data in Table 3-3 shows the number of days standards were exceeded for the study area. It should be noted that data for SO_2 has been omitted as attainment is regularly met in the Mojave Desert Air Basin and few monitoring stations measure SO_2 concentrations.

3.7 Regulatory Background

3.7.1 Federal Regulations

The U.S. Environmental Protection Agency (EPA) is responsible for setting and enforcing the National Ambient Air Quality Standards (NAAQS) for oxidants (O_3), CO, NO_x, SO_2, PM_{10}, and lead. The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the California Air Resources Board (CARB).

TABLE 3-3

PROJECT AREA AIR QUALITY MONITORING SUMMARY 2005-2007

VICTORVILLE AIR MONITORING STATION DATA

POLLUTANT	STANDARD	YEAR		
		2005	2006	2007
Ozone (O_3)				
Maximum 1-Hour Concentration (ppm)		0.131	0.136	0.107
Maximum 8-Hour Concentration (ppm)		0.107	0.105	0.09
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	16	9	XX
Number of Days Exceeding State 8-Hour Standard	> 0.07 ppm	XX	XX	XX
Number of Days Exceeding Federal 1-Hour Standard	> 0.12 ppm	2	1	0
Number of Days Exceeding Federal 8-Hour Standard	> 0.075 ppm	12	6	6
Number of Days Exceeding Health Advisory	≥ 0.15 ppm	0	0	0
Carbon Monoxide (CO)				
Maximum 1-Hour Concentration (ppm)		2.5	2.2	2.1
Maximum 8-Hour Concentration (ppm)		1.6	1.6	1.6
Number of Days Exceeding Federal / State 8-Hour Standard	> 9.0 ppm	0	0	0
Number of Days Exceeding State 1-Hour Standard	> 20 ppm	0	0	0
Number of Days Exceeding Federal 1-Hour Standard	> 35 ppm	0	0	0
Nitrogen Dioxide (NO_2)				
Maximum 1-Hour Concentration (ppm)		0.077	0.079	0.071
Annual Arithmetic Mean Concentration (ppm)		0.019	0.02	0.018
Number of Days Exceeding State 1-Hour Standard	> 0.25 ppm	0	0	0
Inhalable Particulates (PM_{10})				
Maximum 24-Hour Concentration ($\mu g/m^3$)		76	167	358
Number of Samples		324	365	56
Number of Samples Exceeding State Standard	> 50 $\mu g/m^3$	1	2	XX
Number of Samples Exceeding Federal Standard	> 150 $\mu g/m^3$	0	1	1
Ultra-Fine Particulates ($PM_{2.5}$)				
Maximum 24-Hour Concentration ($\mu g/m^3$)		27.0	22	27
Annual Arithmetic Mean ($\mu g/m^3$)		10.1	10.4	9.7
Number of Samples Exceeding Federal 24-Hour Standard	> 65 $\mu g/m^3$	0	0	0

XX = Data not available

Source: United States Environmental Protection Agency (http://www.epa.gov/oar/data/geosel.html) and CARB ADAM (http://www.arb.ca.gov/adam/welcome.html)

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The Federal Clean Air Act (CAA) was first enacted in 1955 and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). As discussed above, the CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance. The CAA also mandates that states submit and implement State Implementation Plans (SIPs) for local areas not meeting these standards. These Plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions).

Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O_3, NO_2, SO_2, PM_{10}, CO, $PM_{2.5}$, and lead. The NAAQS were amended in July 1997 to include an additional standard for O_3 and to adopt a NAAQS for $PM_{2.5}$. Table 3-1 (previously presented) provides the NAAQS within the basin.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and nitrogen oxides (NO_x). NO_x is a collective term that includes all forms of nitrogen oxides (NO, NO_2, NO_3) which are emitted as byproducts of the combustion process.

3.7.2 California Regulations

The CARB, which became part of the California EPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. The California CAA mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards

by the earliest practical date. The CARB established the CAAQS for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride. However at this time, hydrogen sulfide and vinyl chloride are not measured at any monitoring stations in the Basin because they are not considered to be a regional air quality problem. It should also be noted that the CAAQS are generally more stringent than the NAAQS.

Local air quality management districts, such as the MDAQMD, regulate air emissions from commercial and light industrial facilities. All air pollution control districts have been formally designated as attainment or non-attainment for each CAAQS.

Serious non-attainment areas are required to prepare air quality management plans that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g. motor vehicle use generated by residential and commercial development);
- A District permitting systems designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low emissions vehicles by fleet operators;
- Sufficient control strategies to achieve a five percent or more annual reduction in emissions or 15 percent or more in a period of three years for ROCs, NO_x, CO and PM_{10}. However, air basins may use alternative emission reduction strategy which achieves a reduction of less than five percent per year under certain circumstances.

4.0 PROJECT AIR QUALITY IMPACT

4.1 Introduction

The project has been evaluated to determine if it will violate an air quality standard or contribute to an existing or projected air quality violation. Additionally, the proposed project has been evaluated to determine if it will result in a cumulatively considerable net increase of a criteria pollutant for which the project is in non-attainment under an applicable Federal or State ambient air quality standard. The significance of these potential impacts is described in the following section.

4.2 Standards of Significance

CEQA

The criteria used to determine the significance of potential project-related air quality impacts are taken from the Initial Study checklist form in Appendix G of the State CEQA Guidelines. Based on these thresholds, a project would result in a significant impact related to air quality if it would:

(1) Conflict with or obstruct implementation of the applicable air quality plan.

(2) Violate any air quality standard or contribute to an existing or projected air quality violation.

(3) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors).

(4) Expose sensitive receptors to substantial pollutant concentrations.

(5) Create objectionable odors affecting a substantial number of people.

In addition, project impacts would be significant if they exceed the following California standards for localized CO concentrations:

•1-hour CO standard of 20.0 parts per million (ppm)

• 8-hour CO standard of 9.0 ppm.

MDAQMD Significance Thresholds

Additionally, the MDAQMD's CEQA and Federal Conformity Guidelines (June 2007) states that any project is significant if it:

(1) Generates total emissions (direct and indirect) in excess of the thresholds (presented in Table 4-1); and/or

(2) Generates a violation of any ambient air quality standard when added to the local background; and/or

(3) Does not conform with the applicable attainment or maintenance plan(s); and/or

(4) Exposes sensitive receptors to substantial pollutant concentrations.

TABLE 4-1

MAXIMUM DAILY EMISSIONS THRESHOLDS		
Pollutant	**Construction**	**Operational**
NO_x	137 lbs/day	137 lbs/day
VOC	137 lbs/day	137 lbs/day
PM_{10}	82 lbs/day	82 lbs/day
$PM_{2.5}$[1]	55 lbs/day	55 lbs/day
SO_x	137 lbs/day	137 lbs/day
CO	548 lbs/day	548 lbs/day
AMBIENT AIR QUALITY FOR CRITERIA POLLUTANTS (LOCALIZED THRESHOLDS)		
CO		
1-hour average	20.0 ppm	
8-hour average	9.0 ppm	

[1]Threshold for $PM_{2.5}$ obtained from the South Coast Air Quality Management District (SCAQMD)

4.3 Project-Related Sources of Potential Impact

Land uses such as those proposed for the project impact air quality predominately through emissions associated with vehicular travel. Trip generation rates and characteristics were available from the report, Hacienda at Fairview Valley Traffic Impact Analysis (Urban Crossroads, Inc., March 7, 2008).

Rimpo and Associates in association with various air districts (including MDAQMD) throughout California have developed the Urban Emissions (URBEMIS) 2007 (version 9.2.4), land use and air pollution emissions computer model that is used to calculate the daily emissions increase associated with a proposed project. The URBEMIS 2007 model was used to forecast emissions levels for project construction and operational activity. Output from the model runs for both construction and operational scenarios are provided in Appendix "A" and "B", respectively.

4.4 Construction Emissions

Construction activities associated with the proposed project will result in emissions of CO, VOCs, NO_x, SO_x, PM_{10}, and $PM_{2.5}$. Construction related emissions are expected from the following construction activities:

- Grading
- Underground Utility Construction
- Paving
- Building Construction
- Architectural Coatings
- Construction Workers Commuting

4.4.1 Construction Phasing

The project will begin construction no earlier than September 2010, and take approximately 20 years to complete. This date is a conservative estimate and since construction equipment emissions will decrease with time due to technological advancements, this estimate would represent a worst-case analysis should construction begin anytime thereafter.

Project construction is expected to occur in four independent phases, roughly corresponding to each of the four villages that comprise the project. It should be noted that the four phases discussed in the analysis of construction impacts are considered to be consistent with market absorption of each village within the Specific Plan Land Use Plan, and do not correlate to the two operational phases (interim and buildout) as analyzed in the project traffic study. The project site is currently vacant, and thus no demolition activity will be required.

In the first phase of project construction, Village A, located on the western portion of the project site, will be graded. As a worst-case scenario, it is assumed that underground utility construction, paving, building construction, and architectural coating will take place concurrent with grading at the Village A portion of the project site. During this phase of project construction, it is assumed that grading activity will last a duration of approximately three months, underground utility construction a duration of six months, paving a duration of 1.5 months, and building construction and architectural coatings a duration of one year.

In order to represent a worst case scenario, it was assumed that grading, underground utility construction, paving, building construction, and architectural coating on the Village B portion of the project site would begin prior to the completion of building construction and architectural coatings on the Village A site, and thus these activities would overlap. In this second phase of project construction it is assumed that for the Village B area grading activity will last a duration of approximately three months, underground utility construction a duration of six months, paving a duration of 1.5 months, and building construction and architectural coatings a duration of one year.

Phase 3 of project construction includes the completion of building construction and architectural coatings on the Village B portion of the project site, as well as the commencement of grading, underground utility construction, paving, building construction, and architectural coatings on the Village C portion of the project site. It is assumed that grading, underground utility construction, paving, and building construction/architectural coatings on the Village C portion of the site will last a duration of approximately three months, six months, 1.5 months, and one year, respectively.

The fourth and final phase of project construction includes the completion of building construction and architectural coating activities on the Village C portion of the site, as well as grading, underground utility construction, paving, building construction, and architectural coatings for Village D, the easternmost portion of the project site. The tables below summarize the phasing and overlap of construction activities:

Phase 1 (2010)	
Village	**Construction Activity**
A	Grading, Underground Utility Construction, Paving, Building Construction, Architectural Coating

Phase 2 (2017)	
Village	**Construction Activity**
A	Building Construction, Architectural Coating
B	Grading, Underground Utility Construction, Paving, Building Construction, Architectural Coating

Phase 3 (2019)	
Village	**Construction Activity**
B	Building Construction, Architectural Coating
C	Grading, Underground Utility Construction, Paving, Building Construction, Architectural Coating

Phase 4 (2023)	
Village	**Construction Activity**
C	Building Construction, Architectural Coating
D	Grading, Underground Utility Construction, Paving, Building Construction, Architectural Coating

A detailed discussion of each phase of construction activity analyzed is as follows:

4.4.2 Grading

Exhaust emissions from grading activity result from off-road heavy equipment operating during this phase of construction. Based on discussion with the project applicant, it is assumed that the following pieces of equipment will be used in grading activities during each phase of construction:

Grading Equipment		
Description	**Qty**	**Hours/day**
Scrapers	5	8
Dozers	2	8
Graders	2	8
Water Trucks	4	8
Excavators	1	8

Dust is typically a major concern during rough grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). Fugitive dust emissions were calculated assuming that approximately 20 acres would be actively graded per day during each phase. The total acreages to be graded during each phase are as follows:

Grading Acreage by Phase		
Phase	**Total Area to be Graded (acres)**	**Max Daily Disturbance Area (acres)**
1	410	20
2	111	20
3	166	20
4	220	20

Based on information provided by the project applicant, it is estimated that the project site will balance, and no import or export of soil will occur. For the purposes of this analysis, it was conservatively estimated that grading activity for each phase would last approximately

three months. However, it should be noted that fugitive dust emissions resulting from grading activity are calculated by the URBEMIS model based on the maximum daily disturbance area, resulting in a conservative estimate of dust emissions that is not affected by the overall twenty year timeframe over which construction activities will occur.

4.4.3 Underground Utility Construction

Exhaust emissions will result from heavy equipment that will be operational during underground utility construction. The types of activities that generally take place may include general trench-work, pipe laying with associated base material and cover, ancillary earthwork, manholes, etc. Underground utility construction is expected to take place over a duration of approximately six months during each respective phase of construction. Construction equipment will likely include the following:

Underground Utility Construction Equipment		
Description	**Qty**	**Hours/day**
Excavators	1	8
Tractors/Loaders/Backhoes	3	8
Water Trucks	3	8
Scrapers	1	8
Graders	1	8

4.4.4 Paving

Paving activities include the movement of any remaining material as well as necessary curb and gutter work, road base material placement and blacktop. It is estimated that the following areas will be paved during each phase:

Paving Area by Phase	
Phase	**Area to be Paved (acres)**
1	31
2	24
3	22
4	38

Additionally, construction equipment will likely include the following:

Paving Equipment		
Description	**Qty**	**Hours/day**
Pavers	2	8
Rollers	2	8
Water Trucks	1	8

4.4.5 Building Construction

Building construction activity will result in emissions from heavy equipment that will be operational during physical building construction. Construction equipment will likely include the following:

Building Construction Equipment		
Description	**Qty**	**Hours/day**
Forklifts	5	8
Tractors/Loaders/Backhoes	5	8
Water Trucks	5	8
Sweepers/Scrubbers	3	8

4.4.6 Architectural Coatings

The application of architectural surface coatings (painting) generates VOC emissions when organic solvents in the coating evaporate as the coating dries. Emissions resulting from the application of architectural coatings were estimated using the URBEMIS 2007 model.

4.4.7 Construction Workers Commuting

Construction emissions for construction worker vehicles traveling to and from the project site were estimated using the URBEMIS 2007 model, which generally assumes 1.25 construction workers for each piece of equipment active during each phase.

4.4.8 Construction Emission Summary

Assuming a "worst case" scenario for construction activity, the estimated maximum daily construction emissions are summarized on Table 4-2 for each phase of construction activity. Additionally, detailed model outputs are presented in Appendix "A". Under the assumed worst case conditions, emissions resulting from project construction will exceed criteria pollutant thresholds established by the MDAQMD for emissions of VOCs, NO_X, PM_{10}, and $PM_{2.5}$. Section 6.0 of this report provides mitigation measures to reduce emissions to the maximum extent possible.

4.5 Operational Emissions Impacts

Operational activities associated with the proposed project will result in emissions of ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. Operational emissions would be expected from the following equipment and activities:

- Vehicle emissions
- Fugitive dust related to vehicular travel
- Combustion emissions associated with natural gas use
- Emissions resulting from consumer products
- Landscape maintenance equipment emissions
- Architectural coatings

4.5.1 Vehicle Emissions

Project operational (vehicular) impacts are dependent on both overall daily vehicle trip generation and the effect of the project on peak hour traffic volumes and traffic operations in the vicinity of the project. The project related operational air quality impact centers primarily on the approximate 19,432 net vehicle trips generated by the project at full build out. Trip characteristics available from the report, Hacienda at Fairview Traffic Impact Analysis (Urban Crossroads, Inc., March 7, 2008) were utilized in this analysis. Overall project daily emissions are evaluated first, followed by analysis of the potential peak hour "micro-scale" air quality impacts of the project (i.e. CO "hot spot" analysis).

TABLE 4-2 (1 of 2)

EMISSIONS SUMMARY OF CONSTRUCTION ACTIVITIES
(POUNDS PER DAY) (WITHOUT MITIGATION)

Phase 1 Construction		VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Village A							
Grading	Fugitive Dust	0	0	0	0	400.00	83.54
	Off-Road Equipment	17.42	157.23	71.34	0	6.71	6.18
	Worker Trips	0.12	0.23	3.86	0	0.03	0.02
Underground Utility Construction	Equipment Emissions	6.82	56.29	25.88	0	2.97	2.73
	Worker Trips	0.08	0.15	2.48	0	0.02	0.01
Paving	Off-Gas Emissions	2.46	0	0	0	0	0
	Off-Road Equipment	3.57	23.50	11.45	0	1.78	1.64
	On-Road Diesel Equipment	0.76	10.36	3.78	0.01	0.46	0.39
	Worker Trips	0.04	0.08	1.38	0	0.01	0.01
Building Construction	Off-Road Equipment	8.87	65.02	31.29	0	4.33	3.98
	Vendor Trips	3.14	37.50	29.40	0.07	1.76	1.48
	Worker Trips	7.54	14.01	237.07	0.28	2.09	1.15
Architectural Coating	Off-Gas Emissions	80.75	0	0	0	0	0
	Worker Trips	0.11	0.21	3.52	0	0.03	0.02
Maximum Daily Emissions		**131.68**	**364.58**	**421.45**	**0.36**	**420.19**	**101.15**
MDAQMD Regional Threshold		137	137	548	137	82	55
Significant?		**NO**	**YES**	**NO**	**NO**	**YES**	**YES**

Phase 2 Construction		VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Village A							
Building Construction	Off-Road Equipment	8.87	65.02	31.29	0	4.33	3.98
	Vendor Trips	3.14	37.50	29.40	0.07	1.76	1.48
	Worker Trips	7.54	14.01	237.07	0	2.09	1.15
Architectural Coating	Off-Gas Emissions	80.75	0	0	0	0	0
	Worker Trips	0.11	0.21	3.52	0	0.03	0.02
Village B							
Grading	Fugitive Dust	0	0	0	0	400.00	83.54
	Off-Road Equipment	12.18	92.13	50.08	0	3.74	3.44
	Worker Trips	0.06	0.12	2.20	0	0.03	0.02
Underground Utility Construction	Equipment Emissions	4.36	30.74	21.93	0	1.43	1.32
	Worker Trips	0.04	0.08	1.42	0	0.02	0.01
Paving	Off-Gas Emissions	1.75	0	0	0	0	0
	Off-Road Equipment	2.34	14.63	10.60	0	1.07	0.98
	On-Road Diesel Equipment	0.28	3.08	1.19	0.01	0.14	0.11
	Worker Trips	0.02	0.04	0.79	0	0.01	0.01
Building Construction	Off-Road Equipment	5.03	33.74	28.99	0	1.81	1.66
	Vendor Trips	0.33	3.19	3.30	0.01	0.18	0.13
	Worker Trips	0.75	1.46	27.03	0.06	0.42	0.24
Architectural Coating	Off-Gas Emissions	13.88	0	0	0	0	0
	Worker Trips	0.01	0.02	0.40	0	0.01	0
Maximum Daily Emissions		**141.44**	**295.97**	**449.21**	**0.43**	**417.07**	**98.09**
MDAQMD Regional Threshold		137	137	548	137	82	55
Significant?		**YES**	**YES**	**NO**	**NO**	**YES**	**YES**

TABLE 4-2 (2 of 2)

EMISSIONS SUMMARY OF CONSTRUCTION ACTIVITIES
(POUNDS PER DAY) (WITHOUT MITIGATION)

Phase 3 Construction		VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Village B							
Building Construction	Off-Road Equipment	5.03	33.74	28.99	0	1.81	1.66
	Vendor Trips	0.33	3.19	3.30	0.01	0.18	0.13
	Worker Trips	0.75	1.46	27.03	0.06	0.42	0.24
Architectural Coating	Off-Gas Emissions	13.88	0	0	0	0	0
	Worker Trips	0.01	0.02	0.40	0	0.01	0
Village C							
Grading	Fugitive Dust	0	0	0	0	400.00	83.54
	Off-Road Equipment	10.87	76.63	46.91	0	3.02	2.77
	Worker Trips	0.05	0.10	1.89	0	0.03	0.02
Underground Utility Construction	Equipment Emissions	3.79	24.84	21.42	0	1.11	1.02
	Worker Trips	0.03	0.06	1.21	0.02	0.01	0.01
Paving	Off-Gas Emissions	1.70	0	0	0	0	0
	Off-Road Equipment	2.02	12.51	10.46	0	0.89	0.82
	On-Road Diesel Equipment	0.23	2.39	0.95	0.01	0.11	0.08
	Worker Trips	0.02	0.04	0.67	0	0.01	0.01
Building Construction	Off-Road Equipment	4.27	27.03	28.77	0	1.34	1.24
	Vendor Trips	0.60	5.53	6.18	0.03	0.33	0.24
	Worker Trips	1.34	2.65	49.95	0.12	0.92	0.51
Architectural Coating	Off-Gas Emissions	29.94	0	0	0	0	0
	Worker Trips	0.02	0.04	0.74	0	0.01	0.01
Maximum Daily Emissions		**74.88**	**190.23**	**228.87**	**0.25**	**410.20**	**92.30**
MDAQMD Regional Threshold		137	137	548	137	82	55
Significant?		**NO**	**YES**	**NO**	**NO**	**YES**	**YES**

Phase 4 Construction		VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Village C							
Building Construction	Off-Road Equipment	4.27	27.03	28.77	0	1.34	1.24
	Vendor Trips	0.60	5.53	6.18	0.03	0.33	0.24
	Worker Trips	1.34	2.65	49.95	0.12	0.92	0.51
Architectural Coating	Off-Gas Emissions	29.94	0	0	0	0	0
	Worker Trips	0.02	0.04	0.74	0	0.01	0.01
Village D							
Grading	Fugitive Dust	0	0	0	0	400.00	83.54
	Off-Road Equipment	10.22	69.69	45.60	0	2.66	2.45
	Worker Trips	0.03	0.06	1.23	0	0.03	0.02
Underground Utility Construction	Equipment Emissions	3.53	22.3	21.21	0	0.93	0.86
	Worker Trips	0.02	0.04	0.79	0	0.02	0.01
Paving	Off-Gas Emissions	2.77	0	0	0	0	0
	Off-Road Equipment	1.89	11.57	10.40	0	0.81	0.75
	On-Road Diesel Equipment	0.26	2.37	1.00	0.02	0.13	0.08
	Worker Trips	0.01	0.02	0.44	0	0.01	0.01
Building Construction	Off-Road Equipment	3.95	24.21	28.66	0	1.14	1.05
	Vendor Trips	0.50	4.03	5.32	0.03	0.30	0.20
	Worker Trips	0.91	1.94	38.91	0.14	1.09	0.61
Architectural Coating	Off-Gas Emissions	35.81	0	0	0	0	0
	Worker Trips	0.01	0.03	0.58	0	0.02	0.01
Maximum Daily Emissions		**96.08**	**171.51**	**239.78**	**0.34**	**409.74**	**91.59**
MDAQMD Regional Threshold		137	137	548	137	82	55
Significant?		**NO**	**YES**	**NO**	**NO**	**YES**	**YES**

Source: URBEMIS 2007 v. 9.2.4 Outputs

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4.5.2 Fugitive Dust Related to Vehicular Travel

Vehicles traveling on paved roads would be a source of fugitive emissions due to the generation of road dust. The emissions estimates for travel on paved roads were calculated using the URBEMIS 2007 model. The estimated PM_{10} and $PM_{2.5}$ emissions from vehicles for fugitive dust are summarized in Table 4-3 (presented later in this report) and Appendix "B".

It should be noted that the project plans to pave portions of Cahuilla Road (west of Laguna Seca Drive and east of Joshua Road) that are currently unpaved and utilized to access existing residences in the area. For the purposes of this analysis, the reduction in fugitive dust emissions resulting from the paving of this road was not quantified, however, it is conservatively estimated by the South Coast Air Quality Management District (SCAQMD) that paved roads generally reduce fugitive dust emissions by approximately 94% compared to unpaved roads. Thus, the paving of this road segment has the potential to significantly reduce fugitive dust emissions resulting from vehicular travel.

4.5.3 Combustion Emissions Associated with Natural Gas Use

Combustion emissions would be generated by the use of natural gas in the development. The emissions associated with natural gas use were calculated based on assumptions from the URBEMIS 2007 model. The estimated combustion emissions are provided in Table 4-3.

4.5.4 Emissions Resulting from Consumer Products

Consumer products include, but are not limited to detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form ozone and other photochemically reactive pollutants. The emissions associated with the use of consumer products were calculated based on assumptions from the URBEMIS 2007 model. The estimated emissions are provided in Table 4-3 presented later in this report. Detailed emission calculations are provided in Appendix "B".

4.5.5 Landscape Maintenance Emissions

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the development. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in the URBEMIS 2007 model.

4.5.6 Architectural Coatings

It is assumed that over a period of time the buildings that are part of this project will be subject to emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings as part of project maintenance. The emissions associated with architectural coatings were calculated using the URBEMIS 2007 model.

4.5.7 Operations Emissions Summary

The project-related operations emissions summary for Phase 1 (interim) and Phase 2 (buildout), along with a comparison of MDAQMD recommended significance thresholds, is presented in Table 4-3 and Table 4-4, respectively. Additionally, detailed emissions calculations are provided in Appendix "B". The project related emissions levels for operational emissions will exceed the criteria pollutant thresholds established by the MDAQMD for emissions of VOCs, NO_X, CO, PM_{10}, and $PM_{2.5}$ during Phase 1 and Phase 2 of project development. Section 6.0 of this report provides mitigation measures to reduce emissions to the maximum extent possible.

4.6 Secondary Effects Evaluation

The potential impact of the project on sensitive receptors has also been considered. Sensitive receptors can include uses such as long term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, child care centers, and athletic facilities can also be considered as sensitive receptors.

TABLE 4-3

SUMMARY OF PHASE 1 (INTERIM) PEAK OPERATIONAL EMISSIONS (SUMMER)
(POUNDS PER DAY) (WITHOUT MITIGATION)

Operational Activities	**VOC**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Vehicle Emissions	86.46	106.17	904.35	1.81	289.24	56.69
Natural Gas Use	2.84	36.88	16.25	0	0.07	0.07
Landscape Maintenance Emissions	13.98	0.9	79.07	0	0.21	0.21
Consumer Products	87.31	0	0	0	0	0
Architectural Coatings	7.32	0	0	0	0	0
Operational Emissions	**197.91**	**143.95**	**999.67**	**1.81**	**289.52**	**56.97**
MDAQMD Regional Threshold	137	137	548	137	82	55
Significant?	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**

SUMMARY OF PHASE 1 (INTERIM) PEAK OPERATIONAL EMISSIONS (WINTER)
(POUNDS PER DAY) (WITHOUT MITIGATION)

Operational Activities	**VOC**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Vehicle Emissions	92.46	126.32	867.55	1.54	289.24	56.69
Natural Gas Use	2.84	36.88	16.25	0	0.07	0.07
Fireplace Emissions	0.83	14.12	6.01	0.09	1.14	1.13
Landscape Maintenance Emissions	13.98	0.9	79.07	0	0.21	0.21
Consumer Products	87.31	0	0	0	0	0
Architectural Coatings	7.32	0	0	0	0	0
Operational Emissions	**204.74**	**178.22**	**968.88**	**1.63**	**290.66**	**58.10**
MDAQMD Regional Threshold	137	137	548	137	82	55
Significant?	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**

Source: URBEMIS 2007 v 9.2.4 Outputs

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TABLE 4-4

SUMMARY OF PHASE 2 (BUILDOUT) PEAK OPERATIONAL EMISSIONS (SUMMER)
(POUNDS PER DAY) (WITHOUT MITIGATION)

Operational Activities	**VOC**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Vehicle Emissions	93.73	91.58	874.74	2.54	397.75	77.50
Natural Gas Use	5.12	66.37	28.79	0	0.13	0.13
Landscape Maintenance Emissions	25.37	1.61	142.10	0	0.38	0.38
Consumer Products	159.75	0	0	0	0	0
Architectural Coatings	12.42	0	0	0	0	0
Operational Emissions	**296.39**	**159.56**	**1,045.63**	**2.55**	**398.26**	**78.01**
MDAQMD Regional Threshold	137	137	548	137	82	55
Significant?	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**

SUMMARY OF PHASE 2 (BUILDOUT) PEAK OPERATIONAL EMISSIONS (WINTER)
(POUNDS PER DAY) (WITHOUT MITIGATION)

Operational Activities	**VOC**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Vehicle Emissions	98.74	108.84	837.58	2.15	397.75	77.50
Natural Gas Use	5.12	66.37	28.79	0	0.13	0.13
Fireplace Emissions	1.51	25.83	10.99	0.16	2.09	2.07
Landscape Maintenance Emissions	25.37	1.61	142.10	0	0.38	0.38
Consumer Products	159.75	0	0	0	0	0
Architectural Coatings	12.42	0	0	0	0	0
Operational Emissions	**302.91**	**202.65**	**1,019.46**	**2.32**	**400.35**	**80.08**
MDAQMD Regional Threshold	137	137	548	137	82	55
Significant?	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**

Source: URBEMIS 2007 v 9.2.4 Outputs

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Based on MDAQMD guidance, a project is considered to have a significant impact on sensitive receptors if it proposes to locate any of the following land uses near sensitive receptors:

- Any industrial project within 1,000 feet;
- A distribution center (40 or more trucks per day) within 1,000 feet;
- A major transportation project (50,000 or more vehicles per day) within 1,000 feet;
- A dry cleaner using perchloroethylene within 500 feet;
- A gasoline dispensing facility within 300 feet.

It should be noted that although the proposed project contains a neighborhood retail element, it is not anticipated that this portion of the project will generate significant truck traffic. Because the proposed project does not plan to develop any of these land uses, and does not plan to locate any sensitive receptors near any of these land uses, the proposed project is not anticipated to result in a significant impact with regard to sensitive receptors.

The potential for the project to generate objectionable odors has also been considered. Land uses generally associated with odor complaints include:

- Agricultural uses (livestock and farming)
- Wastewater treatment plants
- Food processing plants
- Chemical plants
- Composting operations
- Refineries
- Landfills
- Dairies
- Fiberglass molding facilities

The project does not contain land uses typically associated with emitting objectionable odors. Potential odor sources associated with the proposed project may result from construction equipment exhaust and the application of asphalt and architectural coatings during construction activities, and the temporary storage of typical solid waste (refuse) associated with the proposed project's (long-term operational) uses. Standard construction requirements would minimize odor impacts resulting from construction activity. It should be noted that any construction odor emissions generated would be temporary, short-term, and intermittent in nature and would cease upon

completion of the respective phase of construction activity and is thus considered less than significant. It is expected that project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with the local agency's solid waste regulations. The proposed project would also be required to comply with MDAQMD Rule 402 to prevent occurrences of public nuisances. Therefore, odors associated with the proposed project construction and operations would be less than significant and no mitigation is required.

4.7 Air Quality Management Planning

The applicable air quality plans, the Federal Particulate Matter Attainment Plan and Ozone Attainment Plan for the Mojave Desert set forth a comprehensive set of programs that will lead the Mojave Desert Air Basin into compliance with federal and state air quality standards. The control measures and reduction estimates established in these plans are based on projections for future developments derived from the local existing land use plans. According to the MDAQMD's CEQA and Federal Conformity Guidelines (June 2007), a project is deemed not to exceed this significance threshold if it is consistent with the existing land use plan. However, it should be noted that zoning changes, specific plans, general plan amendments, and similar land use plan changes which do not increase dwelling unit density, vehicle trips, or vehicle miles traveled are also deemed not to exceed this threshold.

The majority of the project site is currently zoned RL-5 (Rural Living), with a maximum population density average of 343 persons per square mile and a minimum lot size of 5 acres. Portions of the project site are currently zoned RL-20 and RL-40. Because the proposed project would exceed the maximum population density for the site and proposes a more intense land use, the project is considered not to be consistent with the applicable air quality management plans, and significant impacts may occur with regard to this threshold. Additionally, it should be noted that although the proposed project exceeds significance thresholds established by the MDAQMD during construction and operational activity, the project specific plan requires the implementation of several "green" project design features aimed at increasing land use efficiency, transportation efficiency, energy efficiency, and water efficiency. A detailed list of project design features to be implemented by the project specific plan is presented in Section 6.0, as well as Appendix "F".

4.8 CO "Hot Spot" Analysis

A CO hotspot is a localized concentration of carbon monoxide that is above State and/or Federal 1-hour or 8-hour ambient air standards that is generally associated with idling or slow moving traffic. It should be noted that since the MDAQMD has not established CO hotspot methodology. As a result, the screening criterion recommended by the SCAQMD has been utilized, which recommends a CO hotspot analysis be performed if the project meets either of the following two conditions:

- The volume to capacity ratio increases by two percent or more as a result of a proposed project for intersections rated level of service (LOS) D or worse or if the LOS declines from C to D.
- The LOS declines from A, B, or C to D, E, or F.

According to data provided by the report Hacienda at Fairview Valley Traffic Impact Analysis (Urban Crossroads, Inc., March 7, 2008), none of the studied intersections will meet these conditions as a result of project generated vehicular traffic. Thus, because the project does not have the potential to create a CO hotspot, a CO hotspot analysis was not performed.

5.0 GLOBAL CLIMATE CHANGE ANALYSIS

5.1 Introduction to Global Climate Change

Global Climate Change (GCC) is simply defined as the change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms. Some data suggests that global climate change has occurred in the past over the course of thousands or millions of years. These climate changes occurred naturally without human influence, as in the case of an ice age. However, some scientists believe that the climate shift presently taking place is occurring at a quicker rate and magnitude. Scientific evidence suggests that GCC is the result of increased concentrations of greenhouse gases in the earth's atmosphere, including carbon dioxide, methane, nitrous oxide, and fluorinated gases. Some scientists believe that this increased rate of climate change is the result of greenhouse gases resulting from human activity and industrialization over the past 200 years.

The purpose of this evaluation is to determine/inventory the greenhouse gas emissions associated with the development and operation of the proposed project and to provide mitigation and/or project design measures to reduce these emissions to the extent feasible. Due to the global nature of climate change, it is unlikely that greenhouse gas emissions resulting from any single project are likely to have a significant impact on overall climate change. Instead, greenhouse gas emissions from the proposed project would combine with greenhouse gas emissions emitted across California, the United States, and the world to cumulatively contribute to global climate change.

5.2 CEQA Evaluation of Global Climate Change

In the context of CEQA, GHGs and Global Climate Change associated with the project may be addressed in two ways:

1. *How does the project affect global climate change?* At this time, there is not enough evidence or data available to reasonably conclude the extent to which any single project will affect global climate change. GHG emissions however may be quantified on an individual project basis for both direct and indirect emissions. This quantitative information

is useful to consider when identifying the project's contribution to cumulative impacts (global climate change is by nature a cumulative impact that cannot be attributable to any single project). The quantification of GHG emissions can also be useful to evaluate design features of a project that serve to reduce potential GHG emissions.

2. *How does climate change affect the project?* Due to the global nature of climate change, this cannot be forecast in a project-specific manner, but potential effects of global climate change can have adverse impacts such as sea level rise, wildfire hazard, and water supply reliability, these items should be discussed in the climate change section of the report.

5.3 GCC Regulatory Setting

Global climate change first became a matter of concern in the 1980s, and the United Nations in 1988 created the Intergovernmental Panel on Climate Change in order to assess the potential impacts of global warming and develop strategies that could be instituted by nations in order to reduce greenhouse gas emissions.

Although global climate change did not become an international concern until the 1980s, efforts to reduce energy consumption began in California in response to the oil crisis in the 1970s, resulting in the unintended reduction of greenhouse gas emissions. In order to manage the state's energy needs and promote energy efficiency, AB 1575 created the California Energy Commission (CEC) in 1975.

Title 24 Energy Standards:

Additionally, Title 24 Part 6, enacted in 1978, required buildings to meet energy efficiency standards. It is estimated by the CEC that consumers have saved $15.8 billion on utility bills since 1978 as a result of Title 24, indirectly resulting in a reduction in greenhouse gas emissions that would otherwise result from increased energy use. Title 24 standards are updated periodically to allow for the consideration and implementation of new energy efficient technologies.

California Assembly Bill No. 1493 (AB 1493):

Vehicle emissions of greenhouse gases were subsequently targeted in 2002 with the passage of Assembly Bill 1493 (AB1493), which required CARB to develop regulations to limit

greenhouse gas emissions by cars and light duty trucks. These measures will go into effect in 2009, and it is estimated that vehicle emissions of greenhouse gases will be reduced by approximately 18 percent by 2020 (CARB 2004).

Executive Order S-3-05:

On June 1, 2005 California Governor Arnold Schwarzenegger mandated GHG emission reduction targets as follows: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; by 2050, reduce GHG emissions 80 percent below 1990 levels.

California Senate Bill No. 1368 (SB 1368):

In 2006, the State Legislature adopted Senate Bill 1368 ("SB 1368"), which was subsequently signed into law by the Governor. SB 1368 directs the California Public Utilities Commission ("CPUC") to adopt a greenhouse gas emission performance standard ("EPS") for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than five years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. Due to the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants. Accordingly, the new law will effectively prevent California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the State. Thus, SB 1368 will lead to dramatically lower greenhouse gas emissions associated with California energy demand, as SB 1368 will effectively prohibit California utilities from purchasing power from out of state producers that cannot satisfy the EPS standard required by SB 1368.

California Assembly Bill 32 (AB 32):

In 2006, Assembly Bill 32 (AB32), the California Global Warming Solutions Act, was signed into law by Governor Arnold Schwarzenegger, giving the California Air Resources Board (CARB) primary responsibility for reducing statewide greenhouse gas emissions to 1990 levels by 2020.

Executive Order S-01-07:

On January 18, 2007 California Governor Arnold Schwarzenegger, through Executive Order S-01-07, mandated a statewide goal to reduce the carbon intensity of California's transportation

fuel by at least ten percent by 2020. The order also requires that a California specific Low Carbon Fuel Standard be established for transportation fuels.

Additional Legislative and Non-Legislative Developments:

Although the United States has pledged over $29 billion for research into global climate change, the EPA does not currently regulate vehicle greenhouse gas emissions. However, it has been argued that the EPA does have the authority to regulate greenhouse gas emissions from vehicle exhaust under the Clean Air Act, as found in the recent Supreme Court ruling of *Massachusetts v. US EPA* (April 2, 2007).

The place of climate change in the CEQA process was acknowledged in August of 2007 with the approval of Senate Bill 97 (SB97). SB97 gives the Office of Planning and Research (OPR) the authority to draft CEQA guidelines for addressing global climate change, and requires OPR to develop guidelines for the feasible mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions by July 2009, and these must be adopted by the Resources Agency by January 2010. Although SB97 does not protect public agencies from CEQA challenges, limits are placed on CEQA challenges for certain infrastructure projects financed by Propositions 1B and 1E.

On October 17, 2007 CARB published the document Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California, which outlines recommendations for discrete early action measures to reduce GHG emissions. Six new regulations are proposed to meet the definition of "discrete early action greenhouse gas reduction measures". The CARB estimates that implementation of the 44 measures outlined in the report can result in a reduction in greenhouse gas emissions of approximately 42 million metric tons of CO_2 equivalent greenhouse gases.

Greenhouse gas emissions resulting from the transportation sector have also been heavily targeted. As found in the recent Ninth Circuit Court of Appeals ruling in *Center for Biological Diversity v. NHTSA* (November 17, 2007), the court ruling established that the administration violated the Energy Policy and Conservation Act by exempting SUVs and light trucks from fuel economy standards. Because vehicle greenhouse gas emissions are directly related to the amount of fuel consumed, it is expected that this ruling could significantly reduce greenhouse gas emissions resulting from vehicle use.

In December 2007, the CARB established the 1990 statewide greenhouse gas emissions level at 427 tera grams CO_2 equivalent greenhouse gases, which, as required under AB32, is the greenhouse gas emissions level which shall be achieved by 2020. One Tera Gram is equivalent to One Million Metric Ton. Greenhouse gas emissions levels for 2004 in California have been estimated at 492 Tg CO_2 Eq (CEC 2006). According to preliminary estimates, 2020 emissions projections could reach 600 million metric tons of CO_2 equivalent greenhouse gases if no reduction measures are taken.

In June 2007, the Association of Environmental Professionals (AEP) published the white paper Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents. Additionally, the California Air Pollution Control Officers Association (CAPCOA) published the white paper CEQA and Climate Change in January 2008. Both documents consider and evaluate numerous approaches to addressing greenhouse gas emissions under the California Environmental Quality Act (CEQA). However, due to pending litigation in various state and federal courts and active federal legislation, many legal and policy questions regarding global warming and greenhouse gas emissions remain unsettled; thus, these documents are intended only to be a resource, as opposed to providing regulatory guidance. It should be noted, however, that the proposed project, through project design features and Specific Plan measures, will implement the applicable greenhouse gas emissions reduction measures as recommended by AEP and CAPCOA in these documents.

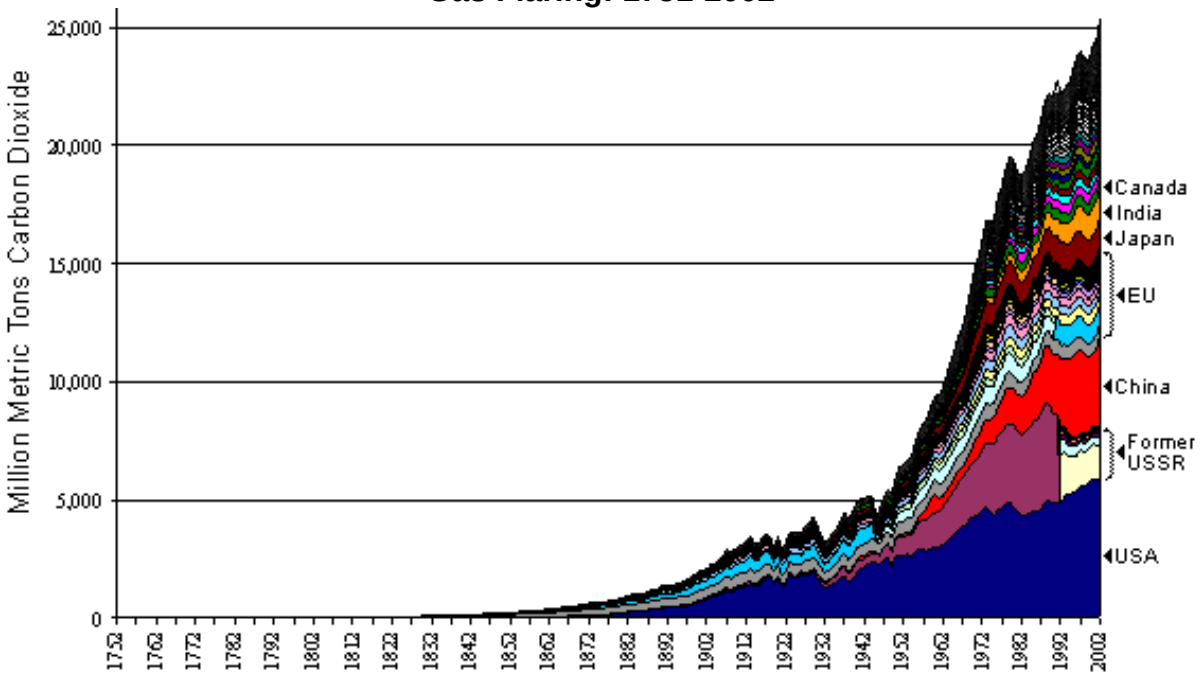
Additionally, in June 2008, the Office of Planning and Research (OPR) released the technical advisory CEQA and Climate Change: Addressing Climate Change Through CEQA Review. In this document, the OPR provides interim guidance as to how climate change should be addressed in CEQA documents until the CEQA Guidelines are amended on or before January 1, 2010 (pursuant to SB97). In addition, the technical advisory includes a number of recommended greenhouse gas emissions reduction measures, and it should be noted that the proposed project plans to implement the applicable measures as part of the project design features and Specific Plan measures.

5.4 Greenhouse Gas Emissions Inventories

It is estimated that the United States produces approximately 20 percent of global greenhouse gas emissions. Figure 1 presents global sources of greenhouse gases by nation.

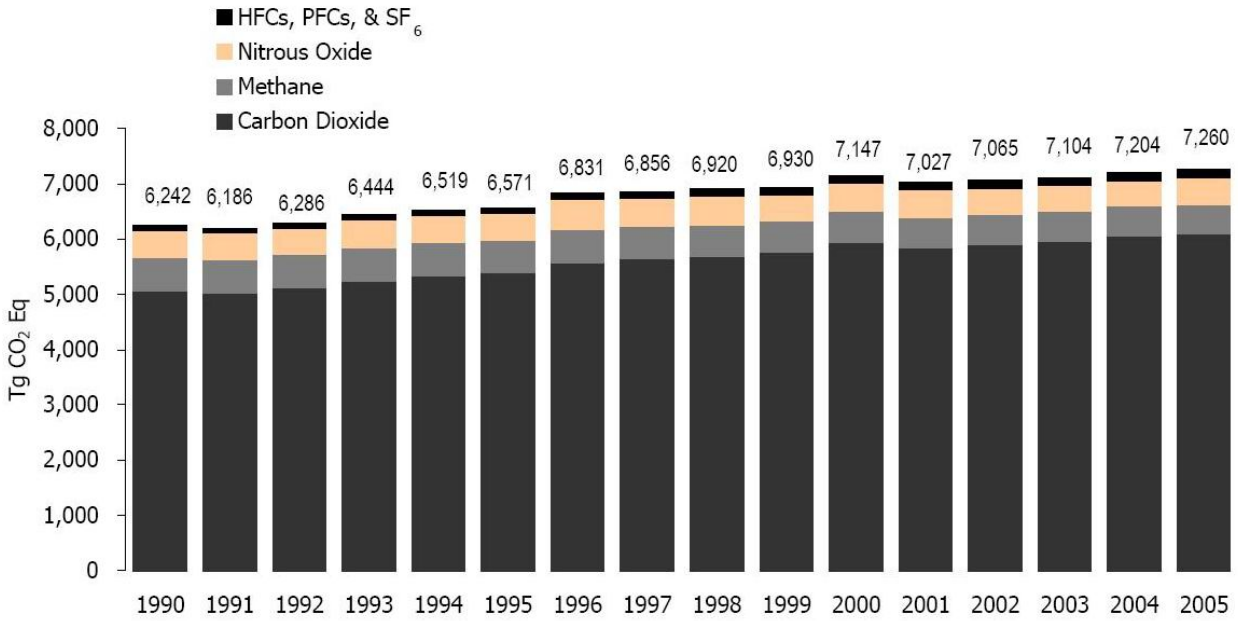
Each year, the Environmental Protection Agency (EPA) prepares an inventory of national greenhouse gas emissions in order to track emissions trends and compare data on a global level. In the United States, the most abundant greenhouse gas emitted by human activity is carbon dioxide, comprising approximately 85 percent of total greenhouse gas emissions. Methane emissions, which are associated with livestock and waste decomposition, have steadily declined since 1990. Nitrous oxide emissions, produced by agricultural processes and motor vehicle exhaust, have decreased slightly since 1990. Overall, greenhouse gas emissions in the United States have risen by 16.3 percent between 1990 and 2005. Figure 2 presents a summary of United States greenhouse gas emissions by gas for years 1990-2005.

Figure 1: Global CO_2 Emissions from Fossil Fuel Burning, Cement Manufacture, and Gas Flaring: 1751-2002



Source: US EPA (http://www.epa.gov/climatechange/emissions/globalghg.html)

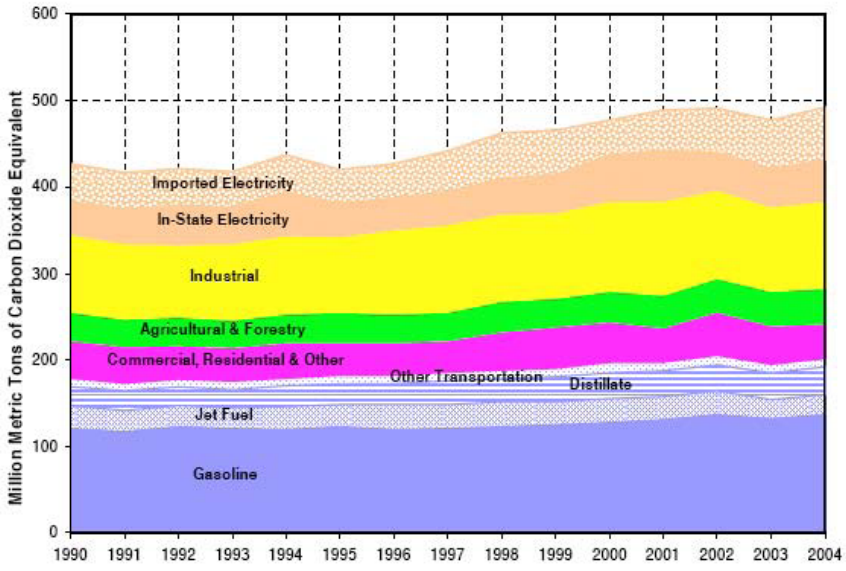
Figure 2: United States Greenhouse Gas Emissions by Gas, 1990-2005



Source: US EPA Inventory Of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005

Although California's rate of growth of greenhouse gas emissions is slowing, the state is still a substantial contributor. In 2004, the state produced an estimated 492 million gross metric tons of carbon dioxide equivalent greenhouse gas emissions. It should be noted however that between the years of 1990 and 2004, California's population has increased by 16 percent while over the same period the growth of greenhouse gas emissions has slowed by 9.7 percent. Much of this reduction in greenhouse gas emissions can be attributed to energy conservation measures in residential and commercial buildings and appliances implemented under Title 24 of the California Building Code. With the implementation of the stricter 2005 Building Energy Efficiency Standards, the California Energy Commission estimates that residential electricity consumption will be reduced by 20.4 percent, and natural gas consumption will be reduced by 8.3 percent compared to 2001 standards. Figure 3, presents California's greenhouse gas emissions from 1990 to 2004 by source; emission quantities are represented in the thickness of the bands for each source.

Figure 3: California's Gross GHG Emissions Trends, 1990-2004



Source: California Energy Commission, Greenhouse Gas Inventory, Dec. 2006

Based on the California Energy Commission's estimates, California's residential and commercial sectors are already in compliance with the goals set by AB32 to reduce greenhouse gas emissions to 1990 levels, as is presented in the following table.

California Greenhouse Gas Emissions ($MMTCO_2E$)		
	1990	2004
Residential	28.97	27.86
Commercial	12.65	12.19

Source: California Energy Commission, Greenhouse Gas Inventory, Dec. 2006

Building related energy consumption was further reduced by the 2005 Building Energy Efficiency Standards, which apply to new residential and commercial construction. The California Energy Commission estimates that these new standards will reduce energy consumption for nonresidential buildings by 8.3 percent. Compliance with these updated California Building Code Title 24 standards will not only reduce energy consumption and costs, but will further reduce emissions of greenhouse gases when compared to older construction.

Water use efficiency is another measure through which greenhouse gas emissions can be reduced. According to the California Climate Action Team Report, "19 percent of all electricity, 30 percent of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute, and use water and wastewater. When a unit of water is saved, so too is the energy required to convey, treat, affect local delivery, perform wastewater treatment, and safely dispose of that unit of water." Thus, reduced energy use resulting from water conservation leads to reduced greenhouse gas emissions.

5.5 Global Climate Change

Global Climate Change (GCC) refers to the change in average meteorological conditions on the Earth with respect to temperature, wind patterns, precipitation and storms. Global temperatures are regulated by naturally occurring atmospheric gases such as water vapor, CO_2 (Carbon Dioxide), N_2O (Nitrous Oxide), CH_4 (Methane), hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. These particular gases are important due to their residence time (duration they stay) in the atmosphere, which ranges from 10 years to more than 100 years. These gases allow solar radiation into the Earth's atmosphere, but prevent radioactive heat from escaping, thus warming the Earth's atmosphere. GCC can occur naturally as it has in the past with the previous ice ages. According to the California Air Resources Board (CARB), the climate change that is currently in effect differs from previous climate changes in both rate and magnitude (CARB, 2004, Technical Support document for Staff Proposal Regarding Reduction of Greenhouse Gas Emissions from Motor Vehicles).

Gases that trap heat in the atmosphere are often referred to as greenhouse gases. Greenhouse gases are released into the atmosphere by both natural and anthropogenic (human) activity. Without the natural greenhouse gas effect, the Earth's average temperature would be approximately 61° Fahrenheit (F) cooler than it is currently. The cumulative accumulation of these gases in the earth's atmosphere is considered to be the cause for the observed increase in the earth's temperature.

Although California's rate of growth of greenhouse gas emissions is slowing, the state is still a substantial contributor. In 2004, the state is estimated to have produced 492 million gross metric tons of carbon dioxide equivalent greenhouse gas emissions. Despite a population increase of 16 percent between 1990 and 2004, California has significantly slowed the rate of

growth of greenhouse gas emissions due to the implementation of energy efficiency programs as well as adoption of strict emission controls.

5.6 Global Climate Change Gases

For the purposes of this analysis, emissions of carbon dioxide, methane, and nitrous oxide were evaluated. Although other substances such as fluorinated gases also contribute to global climate change, sources of fluorinated gases are not well defined and no accepted emissions factors or methodology exist to accurately calculate these gases. The potential for fluorinated gases to result from operation of the proposed project is primarily a concern for HCFC emissions associated with project air conditioning leakage.

Greenhouse gases have varying global warming potential (GWP) values; GWP values represent the potential of a gas to trap heat in the atmosphere. Carbon dioxide is utilized as the reference gas for GWP, and thus has a GWP of 1.

The atmospheric lifetime and GWP of selected greenhouse gases are summarized in the following Table. As shown in the table below, GWP range from 1 for carbon dioxide to 23,900 for sulfur hexafluoride.

Global Warming Potentials and Atmospheric Lifetimes of Select Greenhouse Gases

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310
HFC-23	264	11,700
HFC-134a	14.6	1,300
HFC-152a	1.5	140
PFC: Tetrafluoromethane (CH4)	50,000	6,500
PFC: Hexafluoroethane (C2F6)	10,000	9,200
Sulfur Hexafluoride (SF6)	3,200	23,900

Source: EPA 2006 (URL: http://www.epa.gov/nonco2/econ-inv/table.html)

Water Vapor: Water vapor is the most abundant, important, and variable of the greenhouse gases in the atmosphere. Without water vapor in the atmosphere, the climate would be too unstable to support life. Evaporation from the ocean is the main source of water vapor accounting for nearly 85% of water vapor in the atmosphere. Other sources of water vapor include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves (United States Geological Survey. The Water Cycle: Evaporation. August 28, 2006).

Carbon Dioxide: Carbon dioxide is created in the combustion of fossil fuels, forest clearing, and biomass burning. Human activity is more closely tied to carbon dioxide concentrations in the atmosphere than other greenhouse gases, and carbon dioxide is used as a reference to compare the impacts of other greenhouse gases. Concentrations of carbon dioxide in the atmosphere have typically increased at a rate of 0.5% per year and levels today are 30% higher than those prior to industrialization (United States Environmental Protection Agency. Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2004. April 2006).

Methane: Methane is a hydrocarbon produced through production and distribution of natural gas and oil, coal production, incomplete fuel combustion, waste decomposition, and animal digestion. Methane concentrations in the atmosphere are over twice their pre-industrial levels, and increasing at a rate of 0.6% each year, although this rate is thought to be slowing. The global warming potential of methane is 21 (United States Environmental Protection Agency. Methane: Sources and Emissions. October 19, 2006).

Nitrous Oxide: Nitrous Oxide is emitted during fossil fuel combustion, biomass burning, and certain agricultural and industrial activities. Compared to carbon dioxide, nitrous oxide is an especially harmful greenhouse gas, since it has a global warming potential of 310 (United States Environmental Protection Agency. Nitrous Oxide: Sources and Emissions. October 19, 2006).

Fluorinated Gases: Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons). These gases are typically emitted in smaller quantities, but because they are some of

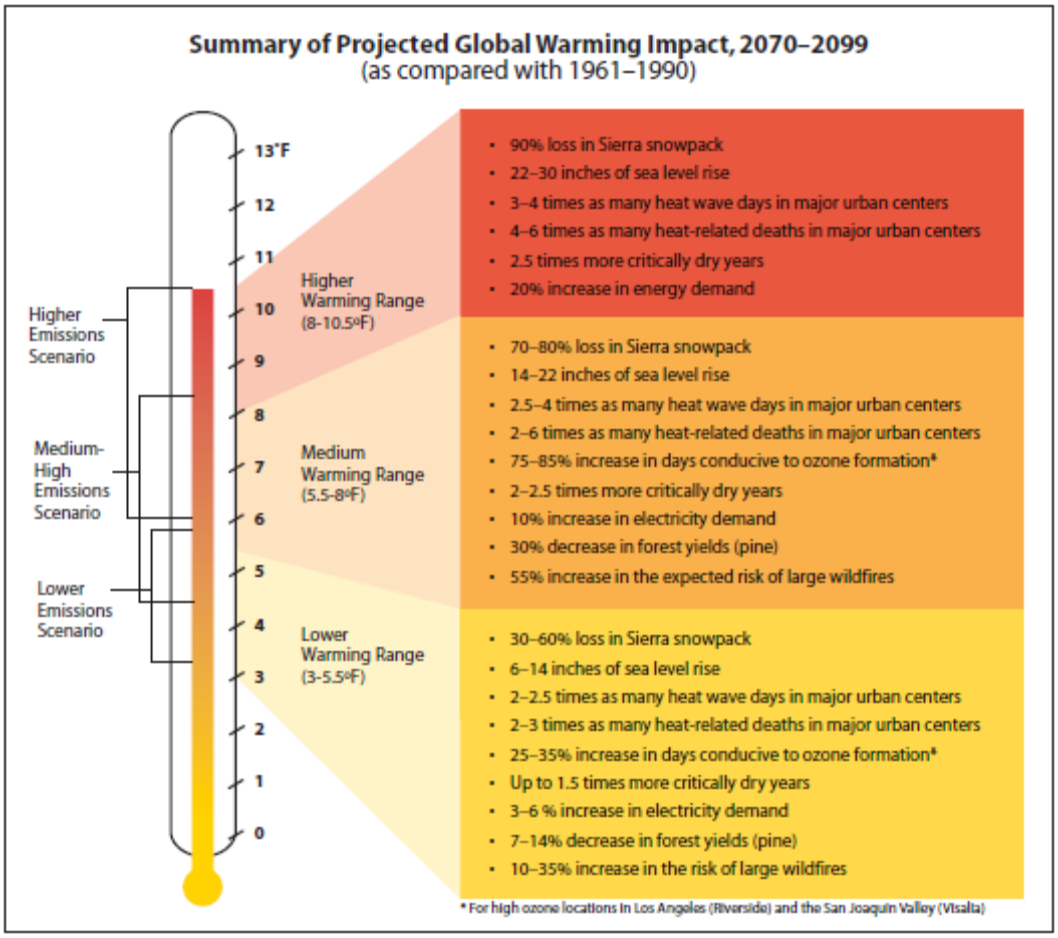
the most potent greenhouse gases, they are referred to as having a "High Global Warming Potential." The global warming potential of these gases ranges from 140 to 23,900 (United States Environmental Protection Agency. High GWP Gases: Sources and Emissions. October 19, 2006).

Aerosols: Aerosols are suspensions of particulate matter (PM) in a gaseous state emitted into the atmosphere through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light; cloud formation can also be affected by aerosols. Sulfate aerosols are emitted when fuel containing sulfur is burned. Black carbon, also known as soot, is emitted during bio mass burning and incomplete combustion with fossil fuels. Regulations for PM have been reducing aerosol concentrations in the United States; however it is expected that global concentrations are likely increasing as a function of other growing nations (United States Environmental Protection Agency. Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2004. April 2006).

5.7 Health Effects

The potential health effects related directly to the emissions of carbon dioxide, methane, and nitrous oxide as they relate to development projects such as the proposed project are still being debated. Their cumulative effects to global climate change have the potential to cause great harm to human health. Increases in Earth's ambient temperatures would result in more intense heat waves, causing more heat-related deaths. Scientists also fear that higher ambient temperatures would increase disease survival rates and result in more widespread disease. Climate change will likely cause shifts in weather patterns, potentially resulting in devastating droughts and food shortages in some areas (American Lung Association, 2004). Figure 4 presents the potential impacts of global warming.

Figure 4



Source: California Energy Commission, 2006. Our Changing Climate, Assessing the Risks to California, 2006 Biennial Report.

Specific health effects associated with directly emitted GHG emissions are as follows:

Water Vapor: There are no known direct health effects related to water vapor at this time. It should be noted however that when some pollutants react with water vapor, the reaction forms a transport mechanism for some of these pollutants to enter the human body through water vapor (United States Geological Survey. The Water Cycle: Evaporation. August 28, 2006).

Carbon Dioxide: According to the National Institute for Occupational Safety and Health (NIOSH) high concentrations of carbon dioxide can result in health effects such as: headaches, dizziness, restlessness, difficulty breathing, sweating, increased heart rate, increased cardiac output, increased blood pressure, coma, asphyxia, and/or convulsions. It should be noted that

current concentrations of carbon dioxide are estimated to be approximately 370 parts per million (ppm), the actual reference exposure level (level at which adverse health effects typically occur) is at exposure levels of 5,000 ppm averaged over 10 hours in a 40-hour workweek and short-term reference exposure levels of 30,000 ppm averaged over a 15 minute period (NIOSH 2005).

Methane: Methane is extremely reactive with oxidizers, halogens, and other halogen-containing compounds. Methane is also an asphyxiant and may displace oxygen in an enclosed space (OSHA 2003).

Nitrous Oxide: Nitrous Oxide is often referred to as laughing gas; it is a colorless greenhouse gas. The health effects associated with exposure to elevated concentrations of nitrous oxide include dizziness, euphoria, slight hallucinations, and in extreme cases of elevated concentrations nitrous oxide can also cause brain damage (OSHA 1999)

Fluorinated Gases: High concentrations of fluorinated gases can also result in adverse health effects such as asphyxiation, dizziness, headache, cardiovascular disease, cardiac disorders, and in extreme cases, increased mortality (NIOSH 1989, 1997).

Aerosols: The health effects of aerosols are similar to that of other fine particulate matter. Thus aerosols can cause elevated respiratory and cardiovascular diseases as well as increased mortality (NASA 2002).

5.8 Project-Related GHG Emissions

Greenhouse gas emissions associated with the development and operation of the proposed project were estimated for the following five categories: (1) increases in emissions from short-term construction activity (fossil-fuel consumption); (2) increase in emissions from electricity generation to provide power to project uses; (3) increase in emissions from natural gas use for project uses; (4) increase in emissions from water/wastewater consumption for project uses; (5) increase in emissions solid waste disposal; and (6) increase in emissions from vehicular-exhaust emissions from daily vehicular activity as a result of the project.

5.8.1 Construction GHG Emissions

During the construction phase of the project, greenhouse gas emissions will be released through the burning of fossil-fuel in construction equipment. Emission forecasts for carbon dioxide and methane were calculated based on CARB's OFFROAD 2007 emissions inventory model and associated SCAQMD methodology. Emissions of nitrous oxide resulting from construction equipment were estimated based on emission factors provided in the document General Reporting Protocol for the Voluntary Reporting Program (The Climate Registry, October 29, 2007) and CARB's OFFROAD 2007 model. Construction equipment and phasing estimates are based on discussions with the project team and are consistent with the construction scenarios presented in Section 4.0 of this report.

Recommended measures to reduce greenhouse gas emissions during project construction are presented in Section 6.0 of this report. However, the extent to which these measures will reduce greenhouse gas emissions cannot be accurately estimated at this time, thus *no reduction in emissions is taken for purposes of this evaluation*. Table 5-1 summarizes greenhouse gas emissions by construction phase, and Appendix "F" contains the detailed OFFROAD 2007 emissions inventory outputs and associated construction emission hand calculations.

5.8.2 Area Source GHG Emissions

Another substantial source of greenhouse emissions is the combustion of fossil fuels for electricity production, cooking, and heating. While not released on-site, increased greenhouse gas emissions resulting from the added electrical demands of the project will be created, since electricity is often generated through the burning of coal, oil, or natural gas. Also, greenhouse gases will be released through commercial natural gas use.

Greenhouse gas emissions resulting from project energy use were calculated based on average annual commercial energy usage rates published in the *SCAQMD CEQA Air Quality Handbook 1993*. Power generation emission factors for carbon dioxide were obtained from the US Environmental Protection Agency's eGRID2006 database for the California/Mexico subregion.

TABLE 5-1

CONSTRUCTION GREENHOUSE GAS EMISSIONS
POUNDS PER DAY

Phase	Construction Activity	CO_2	N_2O		CH_4	
		lbs/day	lbs/day	lbs/day CO_2 EQ	lbs/day	lbs/day CO_2 EQ
1	Grading	27,739.18	1.22	378.48	2.87	60.35
	Underground Utility Construction	13,256.33	0.67	206.30	1.29	27.08
	Paving	5,118.37	0.31	96.62	0.64	13.51
	Building/Architectural Coating	21,443.64	1.63	504.34	2.08	43.63
2	Grading	27,799.12	0.95	295.87	1.96	41.06
	Underground Utility Construction	13,294.86	0.49	153.37	0.84	17.68
	Paving	5,140.06	0.22	67.24	0.42	8.92
	Building/Architectural Coating	21,574.63	1.06	328.39	1.26	26.42
3	Grading	27,804.76	0.91	281.67	1.74	36.62
	Underground Utility Construction	13,298.69	0.47	144.28	0.74	15.55
	Paving	5,141.96	0.20	62.20	0.37	7.83
	Building/Architectural Coating	21,586.23	0.96	298.18	1.10	23.06
4	Grading	27,819.56	0.85	263.09	1.41	29.65
	Underground Utility Construction	13,308.26	0.43	132.39	0.59	12.46
	Paving	5,147.24	0.18	55.59	0.29	6.09
	Building/Architectural Coating	21,618.74	0.83	258.68	0.87	18.18

Source: Urban Crossroads, Inc. Hand Calculations, 2008

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Commercial natural gas use will be another contributor of greenhouse gas emissions for the proposed project. In order to forecast the greenhouse gas emissions resulting from natural gas combustion, usage estimates consistent with the URBEMIS 2007 model were used. Greenhouse Gas Emissions from natural gas usage were calculated based on U.S. EPA emission factors (Compilation of Air Pollutant Emission Factors, Volume 1, Chapter 1, External Combustion Sources—Emission Factors for Criteria Pollutants and Greenhouse Gases from Natural Gas Combustion, Table 1.4-1.

Emissions of greenhouse gases will also occur as a result of project water consumption. Water use and energy consumption are closely linked, especially in Southern California, where water supplies are limited and a significant portion of the water supply must be imported. Large amounts of energy are required for the conveyance, treatment, distribution, and end use of water, as well as wastewater treatment. Based on water service demand estimates from the project's Water Supply Assessment (Terra Nova Planning and Research, June 2008), it is estimated that the project will require approximately 435 million gallons of water per year at project buildout. With delivered water carrying an estimated embodied energy of 0.0085 kWh/gallon and an emission factor of 0.879 pounds of CO_2 emitted per kWh of electricity produced, it is estimated that water consumption will result in emissions of approximately 1,474 metric tons of CO_2 annually. It should be noted that the embodied energy factor of 0.0085 kWh/gallon includes 0.0058 kWh/gal for supply, 0.00067 kWh/gal for distribution, and 0.002 kWh/gal for wastewater treatment (QEI, Inc., 1992, *Electricity Efficiency Through Water Efficiency*, Report for the Southern California Edison Company, p. 24).

GHG emissions will also occur as a result of municipal solid waste generated by the proposed project. Solid waste generated by the proposed project has the potential to be disposed of in a landfill, where it will emit methane gas as it decomposes. Solid waste generation rates were estimated utilizing data provided by the California Integrated Waste Management Board, and emissions of methane gas resulting from project generated solid waste were estimated utilizing data provided in the document Solid Waste Management and Greenhouse Gases (United States Environmental Protection Agency, September 2006).

Table 5-2 and Table 5-3 (presented later in this report) summarize greenhouse gas emissions for Phase 1 and Phase 2 project operations (respectively) resulting from project energy use, water use, and natural gas consumption. See Appendix "D" for detailed project calculations.

5.8.3 Mobile Source GHG Emissions

The majority of greenhouse gas emissions associated with the daily project operations are the result of increased project-related motor vehicle activity. Emissions for carbon dioxide, methane, and nitrous oxide were calculated using trip generation rates available in the report Hacienda at Fairview Valley Traffic Impact Analysis (Urban Crossroads, Inc., March 7, 2008). Trip characteristics, such as trips, trip lengths, and percentage of trips, were estimated consistent with the methodology utilized in Section 4.0 of this report. Vehicle emission factors for both starting and running emissions were obtained using the EMFAC 2007 model. Finally, hand calculations consistent with URBEMIS 2007 were applied in order to forecast greenhouse gas emissions resulting from project related trips. In order to calculate vehicle emissions of nitrous oxide, a conversion factor based on CARB findings (Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005) was applied to emission factors for oxides of nitrogen. Cruising speeds utilized for the EMFAC 2007 model were estimated at 30 miles per hour (consistent with the URBEMIS 2007 model). Emission factors were calculated by EMFAC 2007 based on the project build out years of 2020 (Phase 1) and 2030 (Phase 2), consistent with the project air and traffic studies. In order to obtain accurate forecasts of greenhouse gas emissions resulting from the project, emissions were calculated for both summer and winter temperatures of 80°F and 60°F, respectively. These temperatures were utilized based on the conservative URBEMIS 2007 model default temperatures for the project area. Emissions were also calculated based on project generated trips with and without trip reducing mitigation measures. Table 5-2 and Table 5-3 summarize greenhouse gas emissions resulting from Phase 1 and Phase 2 project-related traffic (respectively). Appendix "D" contains the detailed calculations for mobile source greenhouse gas emission.

It is extremely important to note that the Vehicle Miles Traveled (VMT) related to the project emissions estimates do not necessarily represent "new" VMTs. At least some portion of the VMT calculated for the project are likely the product of re-directed VMTs,

TABLE 5-2

TOTAL GREENHOUSE GAS EMISSIONS (ANNUAL)[1]
(METRIC TONS PER YEAR) (PHASE 1 INTERIM 2020)

Source	CO_2	N_2O		CH_4	
	mtpy	mtpy	mtpy CO_2 EQ	mtpy	mtpy CO_2 EQ
Mobile Source Emissions	21,538.01	0.65	200.01	1.06	22.22
Energy Use Emissions	5,726.99	0.05	16.16	0.23	4.93
Water Use Related Emissions	807.64	0.01	3.10	0.03	0.63
Municipal Solid Waste Generation				51.19	1,074.96
Natural Gas Emissions	5,061.98	0.09	28.77	0.10	2.04
Total (metric tons per year)	33,134.62	0.80	248.04	52.61	1,104.78
Total (Teragrams CO_2 Equivalent)	0.0345				

Source: Urban Crossroads, Inc. Greenhouse Gas Emissions Hand Calcs, 2008
[1]Annual = Average of summer and winter emissions, includes emissions from mobile and area sources.

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TABLE 5-3

TOTAL GREENHOUSE GAS EMISSIONS (ANNUAL)[1]
(METRIC TONS PER YEAR) (PHASE 2 BUILDOUT 2030)

Source	CO_2	N_2O		CH_4	
	mtpy	mtpy	mtpy CO_2 EQ	mtpy	mtpy CO_2 EQ
Mobile Source Emissions	33,135.08	0.61	188.84	1.21	25.34
Energy Use Emissions	9,582.08	0.09	27.04	0.39	8.24
Water Use Related Emissions	1,473.73	0.01	3.10	0.06	1.26
Municipal Solid Waste Generation				88.50	1,858.44
Natural Gas Emissions	9,056.33	0.17	51.47	0.17	3.65
Total (metric tons per year)	53,247.22	0.87	270.46	90.33	1,896.93
Total (Teragrams CO_2 Equivalent)	0.0554				

Source: Urban Crossroads, Inc. Greenhouse Gas Emissions Hand Calcs, 2008
[1]Annual = Average of summer and winter emissions, includes emissions from mobile and area sources.

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meaning, trips that would already occur at another geographic location irrespective to development of the proposed project. Therefore the emissions summarized in Tables 5-2 and 5-3 are likely an overestimation of actual greenhouse gas emissions resulting from the proposed project.

5.9 Threshold of Significance

The methodology used in the Greenhouse Gas Evaluation to analyze the project's potential effect on global warming includes a calculation of GHG emissions. The purpose of calculating the emissions is for informational purposes, as there is no quantifiable emissions threshold. Rather, the project's potential for creating an impact on global warming is based on a comparative analysis of the project against the emission strategies contained in the California CATs Report to the Governor. If it is determined that the proposed project is compatible or consistent with the applicable CAT strategies then the project's cumulative impact on global climate change is considered less than significant.

It is estimated that the proposed project (at buildout) would result in approximately 0.0554 Tg CO_2 Eq. which represents approximately 0.01126 % of California's 2004 total CO_2 emissions. It should be noted that implementation of the project design features for construction and operational activities presented in Section 6.0 of this report will not only reduce emissions of criteria pollutants, but also emissions of greenhouse gases through reduced equipment exhaust emissions, and reduced project water and electrical use.

It should be noted that the reduction in greenhouse gas emissions resulting from the implementation of these project design features is not known at this time, and thus, implementation of the project design features will likely further reduce greenhouse gas emissions beyond what is presented in Tables 5-2 and 5-3.

Due to the overwhelming scope of GCC, it is not anticipated that any single development project would have a substantial effect on GCC. No single development can be deemed individually responsible for global temperature increases and rising sea levels. Instead, GHG emissions from the proposed project would combine with GHG emissions emitted across California, the United States, and the world to cumulatively contribute to GCC. Therefore, this analysis considers GCC on a cumulative basis.

Although implementation of the CAT strategies will likely reduce GHG emissions to the extent possible, it is not possible to specifically quantify the reduction in GHG that will result from implementation of CAT strategies and programs. However, a project that is consistent with CAT strategies is consistent with the strategies suggested to reduce California's emissions to the levels proposed by Executive Order S-3-05 and AB 32, and therefore the project will result in a less than significant cumulative impact on GCC.

The County of San Bernardino is currently in the process of preparing a detailed greenhouse gas emissions inventory and reduction plan for all county-controlled operations per their settlement agreement with the California Attorney General's office. Specific information regarding the County of San Bernardino's greenhouse gas emissions inventory and reduction plan are not available at this time since this information has not been released for public review. When and if such information is available the analysis herein may be amended accordingly.

It should be noted that OPR, with the assistance of CARB's technical staff, and the SCAQMD are currently in the process of establishing CEQA GHG significance thresholds. Both agencies are in the preliminary "working group" stages of developing GHG significance thresholds and no formal guidance has been adopted. Any significance threshold formally adopted by the SCAQMD would apply to projects located within the SCAQMD's district, while any CARB significance threshold would apply to projects located within the state. The progress of the proposed significance thresholds by OPR/CARB will be tracked for purposes of this project and if guidance becomes available the report may be updated if applicable.

Lastly, the proposed project is consistent with all applicable CAT strategies and the recommended Attorney General's Mitigation Measures to reduce California's emissions to levels proposed in Executive Order S-3-05.

TABLE 5-4

Project Compliance with Applicable 2006 CAT Report Greenhouse Gas Emissions Reduction Strategies

Strategy	Project Compliance
Vehicle Climate Change Standards AB 1493 (Pavley) required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change	Compliant. Vehicles that will access the project site will be in compliance with CARB vehicle standards.

emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by the ARB in September 2004.	
Other Light Duty Vehicle Technology New standards would be adopted to phase in beginning in the 2017 model	
Heavy-Duty Vehicle Emission Reduction Measures Increased efficiency in the design of heavy-duty vehicles and an education program for the heavy-duty vehicle sector.	
Diesel Anti-Idling In July 2004, the CARB adopted a measure to limit diesel-fueled commercial motor vehicle idling.	Compliant. Heavy-duty diesel trucks that access the project site will be required to limit idling to no more than five minutes.
Hydrofluorocarbon Reduction 1) Ban retail sale of HFC in small cans; 2) Require that only low GWP refrigerants be used in new vehicular systems; 3) Adopt specifications for new commercial refrigeration; 4) Add refrigerant leaktightness to the pass criteria for vehicular Inspection and Maintenance programs; 5) Enforce federal ban on releasing HFCs.	Compliant. This measure applies to consumer products. When CARB adopts regulations for these reduction measures, any products that the regulations apply to will comply with the measures.
Alternative Fuels - Biodiesel Blends CARB would develop regulations to require the use of 1 to 4 percent biodiesel displacement of California diesel fuel.	Not Applicable.
Alternative Fuels – Ethanol Increased use of ethanol fuel.	Not Applicable.
Achieve 50 percent Statewide Recycling Goal Achieving the State's 50 percent waste diversion mandate as established by the Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989), will reduce climate change emissions associated with energy intensive material extraction and production as well as methane emission from landfills. A diversion rate of 48 percent has been achieved on a statewide basis. Therefore, a 2 percent additional reduction is needed.	Compliant. Project design will include provisions for recycling by residents. Additionally, the current rate of diversion for the Apple Valley area is approximately 59% and therefore already meet's the State's 50% recycling goal (CIWMB 2008, Diversion Rate Measurement Calculation).
Zero Waste - High Recycling Additional recycling beyond the State's 50 percent recycling goal.	
Landfill Methane Capture Install direct gas use or electricity projects at landfills to capture and use emitted methane.	Not Applicable.
Urban Forestry A new statewide goal of planting 5 million trees in urban areas by 2020 would be achieved through the expansion of local urban forestry programs.	Not Applicable. However the project will provide trees consistent with the City's Landscape Standards.
Afforestation/Reforestation Projects Reforestation projects focus on restoring native tree cover on lands that were previously forested and are now covered with other vegetative types.	

Water Use Efficiency Approximately 19 percent of all electricity, 30 percent of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Increasing the efficiency of water transport and reducing water use would reduce greenhouse gas emissions.	Compliant. The project shall implement U.S. EPA Certified WaterSense labeled or equivalent faucets and high-efficiency toilets (HETs) in residential uses, and implement water-conserving shower heads to the extent feasible.
Building Energy Efficiency Standards in Place and in Progress Public Resources Code 25402 authorizes the CEC to adopt and periodically update its building energy efficiency standards (that apply to newly constructed buildings and additions to and alterations to existing buildings)	Compliant. Project will be compliant with updated Title 24 standards for building construction.
Appliance Energy Efficiency Standards in Place and in Progress Public Resources Code 25402 authorizes the Energy Commission to adopt and periodically update its appliance energy efficiency standards (that apply to devices and equipment using energy that are sold or offered for sale in California).	Consistent. Appliances purchased for use in project will be consistent with existing energy efficiency standards.
Smart Land Use and Intelligent Transportation Systems (ITS) Smart land use strategies encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. ITS is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods and services. Governor Schwarzenegger is finalizing a comprehensive 10-year strategic growth plan with the intent of developing ways to promote, through state investments, incentives and technical assistance, land use, and technology strategies that provide for a prosperous economy, social equity, and a quality environment.	Compliant. The proposed project locates retail next to residential land uses, which is considered smart land use. Because the project is locating retail next to residential, providing higher density development, and providing local jobs, the project will likely reduce the number of vehicle trips and vehicle miles traveled, reducing greenhouse gas emissions as a result. In addition the project incorporates three transit stops which have the potential to reduce trips as well.
Measures to Improve Transportation Energy Efficiency Builds on current efforts to provide a framework for expanded and new initiatives including incentives, tools, and information that advance cleaner transportation and reduce climate change emissions.	Compliant. The proposed project promotes fuel conservation through design features, which promote pedestrian traffic.
Green Buildings Initiative Green Building Executive Order, S-20-04 (CA 2004), sets a goal of reducing energy use in public and private buildings by 20 percent by the year 2015, as compared with 2003 levels.	Compliant. With implementation of the recommended mitigation and project design features, the project is expected to reduce energy use. Additionally, the project is consistent with energy standards required by Title 24. With implementation of the 2008 Title 24 standards electricity use is estimated to be reduced by 22.7% compared to 2005 standards for residential uses and

	27.6 % compared to 2005 standards for nonresidential newly constructed buildings (CEC 2007).
California Solar Initiative Installation of 1 million solar roofs or an equivalent 3,000 MW by 2017 on homes and businesses; increased use of solar thermal systems to offset the increasing demand for natural gas; use of advanced metering in solar applications; and creation of a funding source that can provide rebates over 10 years through a declining incentive schedule.	Compliant. Project Specific Plan requires a minimum of 25% of total residential units to be powered by solar energy.

Source: State of California, Environmental Protection Agency, Climate Action Team, 2006.

As shown, the proposed project complies with all feasible and applicable measures as identified by the CAT, thus the proposed project is assumed to be consistent with the goals and objectives of the emissions reduction targets set forth in AB32.

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6.0 FINDINGS AND CONCLUSIONS

6.1 Standard Regulatory Requirements

MDAQMD Rules that are currently applicable during construction include: Regulation XI (Source Specific Standards); Rule 1103 (Cutback and Emulsified Asphalt); Rule 1113 (Architectural Coatings); and Regulation IV (Prohibitions); and Rule 403.2 (Fugitive Dust Control for the Mojave Desert Planning Area). The specific Rule 403.2 regulatory requirements applicable to this project are summarized in Appendix "E".

Additionally, The California Air Resources Board, in Title 13, Chapter 10, Section 2485, Division 3 of the of the California Code of Regulations, imposes a requirement that heavy duty trucks accessing the site shall not idle for greater than five minutes.

6.2 Construction Activity Recommended Mitigation Measures

Recommended emissions reduction measures to help reduce construction air quality impacts include:

- The applicant shall minimize pollutant emissions by maintaining equipment engines in good condition and in proper tune according to manufacturer's specifications and during smog season (May through October) by not allowing construction equipment to be left idling for more than five minutes (per California law). Prior to the issuance of grading permits, signs shall be posted at the construction site reminding workers of the five-minute idling rule. Additionally, during maintenance, precautions shall be taken to ensure that fuel is not leaked onto the ground. Equipment maintenance records and equipment design specification data sheets shall be kept onsite during construction and subject to inspection by the SCAQMD or public works director. *As a conservative measure, no reduction was taken in this analysis for the use of properly timed and tuned equipment;*

- Prior to the construction of the project, the project proponent shall provide a Fugitive Dust Control Plan that describes the application of Best Management Practices (BMPs) to control fugitive dust during construction. BMP's shall include but should not be limited to:

- The applicant shall use periodic watering for short-term stabilization of disturbed surface area and haul roads to minimize visible fugitive dust emissions. Watering, with complete coverage, shall occur at least three times a day, preferably in the mid-morning, afternoon and after work is done for the day. Implementation of this measure is estimated to reduce PM_{10} and $PM_{2.5}$ fugitive dust emissions by approximately 61%;

- The applicant shall take actions sufficient to prevent project-related trackout onto paved surfaces and shall cleanup project-related trackout or spills on publicly maintained paved surfaces at the end of each day;

- The applicant shall stabilize graded site surfaces upon completion of grading when subsequent development is delayed or expected to be delayed more than thirty days, except when such a delay is due to precipitation that dampens the disturbed surface sufficiently to eliminate visible fugitive dust emissions;

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 15 mph averaged over a one-hour duration;

- Contractor shall ensure use of low-sulfur diesel fuel in construction equipment as required by the California Air Resources Board (CARB) (diesel fuel with sulfur content of 15 ppm by weight or less). Prior to the issuance of grading permits, the applicant shall provide documentation to the County that verifies that certain equipment are exempt; that a low-sulfur diesel supply has been secured; and that the construction contractor is aware that the use of low-sulfur diesel is required. *As a conservative measure, no reduction was taken in this analysis for the use of low-sulfur diesel fuel;*

- Contractor shall ensure that all off-road heavy-duty construction equipment utilized during construction activity will be CARB Tier II Certified or better (to the maximum extent feasible). Prior to the issuance of grading permits, the applicant shall provide documentation to the County that verifies that certain equipment is not available as CARB Tier II certified; that applicable CARB Tier II certified equipment has been secured; and that the construction contractor is aware that the use of CARB Tier II Certified equipment is required.

Implementation of this measure is estimated to reduce emissions of VOCs, NO_X, PM_{10}, and $PM_{2.5}$ by approximately 78.31%, 54.57%, 54.82%, and 50.43%, respectively;

- Contractor shall utilize existing power sources (e.g., power poles) or clean-fuel generators rather than temporary power generators where feasible. *As a conservative measure, no reduction was taken in this analysis for the use of existing power sources;*

- During construction of the proposed project, only low-VOC paints and coatings as defined in MDAQMD Rule 1113 shall be used. Prior to the issuance of building permits, the applicant shall provide documentation to the County that verifies coatings as defined in MDAQMD Rule 1113 have been secured; and that the construction contractor is aware that the use of low-VOC paints and coatings is required.

6.3 Specific Plan Goals

The proposed project provides for a mixed-use, pedestrian friendly environment with access to a variety of transportation options, including walking, biking, public transit, or car.

The Specific Plan for the proposed project creates a regulatory framework which focuses on "Green Development". The Green Development Goals and Efficiency Provisions contained in the Specific Plan, and summarized below, are intended to result in a superior community development which reduces greenhouse gas emissions and conserves water and energy resources, as consistent with the California Global Warming Solutions Act (AB32).

Four Green Development goals are incorporated to guide the implementation of the Specific Plan towards the Green Development principle:

- Land Use Efficiency: Seeks to respect the natural site, increase land use efficiency, reduce greenhouse gas emissions, and increase public health of residents and surrounding neighborhoods.
- Transportation Efficiency: Seeks to increase overall transportation system efficiency, reduce greenhouse gas emissions and decrease demand for gasoline powered vehicles.

- Water Efficiency: Seeks to increase water use efficiency and decrease water use demand.
- Energy Efficiency: Seeks to increase the use of renewable energy sources, increase energy efficiency, reduce greenhouse gas emissions, and decrease energy demand.

These goals will be achieved through the Specific Plan regulations which govern the design and implementation of land use patterns, infrastructure, buildings, energy systems, landscapes, and other features at the project site. The Specific Plan provisions are presented, in detail, in Appendix "F".

6.4 Specific Plan Requirements

The following project design features will be implemented by the project as required by the Specific Plan:

- Placement of neighborhood commercial, recreation areas, and public safety near residential uses in order to reduce vehicle miles traveled and reduce the number of vehicle trips through on-site improvements such as sidewalks or pedestrian walkways to promote pedestrian and bicycle activity.

- Encourage the use of Neighborhood Electric Vehicles (NEVs) to access recreational and commercial areas through the establishment of maximum speed limits on all private streets.

- Designate multiple transit stops throughout the site in order to service future public transportation routes.

- Encourage pedestrian and bicycle activity by providing open pedestrian access to an adjacent street's sidewalk for the majority of local cul-de-sac streets.

- Increase water use efficiency and decrease water use demand through the following improvements:

- Require a minimum of 90% of all non-turf planting areas in common areas and street right of ways to utilize drought tolerant and/or native plant materials.
- Establish a maximum percentage of turf grass coverage in common and residential front yards for lots ¾ acre and larger (19% max) and less than ¾ acre (28% max).
- Eliminate "non-functional" turf grass coverage allowed in recreation areas.
- Provide a wastewater treatment system which reuses reclaimed water to irrigate common area and street right of way landscape.
- Require micro-irrigation systems for watering of plants within common areas and street right of ways.
- Implementation of Specific Plan Design Guidelines to strongly encourage incorporation of water saving features and technologies within residential and commercial buildings.
- Provide community pool(s) at the community recreation areas within convenient distance from the majority of active adult homes to reduce the need for private pools at individual homes and thus decrease supplemental water requirements at individual lots.
- Low flow faucets as well as high-efficiency toilets shall be installed in restrooms.

- Reduce energy requirements through implementation of the following community features:
  - Establishment of a "dark sky" policy which limits street lighting and thereby the electricity requirements to decision making points (e.g., street intersections), night-use recreation areas or where County public safety officials deem them necessary.
  - Provide community pool(s) at the community recreation areas within convenient distance from the majority of active adult homes in order to reduce the need for private pools at individual homes thereby decreasing pool equipment energy requirements at individual lots.

- Construction of buildings that exceed minimum statewide energy requirements 15% beyond Title 24; this may include, but is not limited to:
  - Require that a minimum of 25% of the total residential units constructed within the Specific Plan Area shall be powered by primarily by solar energy

- Encourage home orientation with the majority of window areas facing due north and south, by designing local streets in a predominantly east-west direction, to minimize transfer of heat generated by early morning and late afternoon summer sunlight through windowed surfaces. Conversely in the winter, exposed windows on the southern side of a home take advantage of the natural heating and lighting effects of the low sun position.
- Use of low emission water heaters
- Use of central water heating systems
- Use of energy efficient appliances
- Use of increased insulation
- Use of automated controls for air conditioners
- Use of energy-efficient parking lot lights
- Use of lighting controls and energy-efficient lighting

6.5 Recommended Measures Identified by the California Attorney General's Office

Additionally, the project will implement to the maximum extent feasible, the following applicable GHG reduction measures as part of project design as recommended by the California Attorney General's Office in the document Addressing Global Warming Impacts at the Local Agency Level (2008):

Generally Applicable Measures

Energy Efficiency

- Design buildings to be energy efficient. Site buildings to take advantage of shade, prevailing winds, landscaping and sun screens to reduce energy use.
- Install efficient lighting and lighting control systems. Use daylight as an integral part of lighting systems in buildings.
- Install light colored "cool" roofs, cool pavements, and strategically placed shade trees.
- Install energy efficient heating and cooling systems, appliances and equipment, and control systems.

- Install light emitting diodes (LEDs) for traffic, and other outdoor lighting.

- Limit the hours of operation of outdoor lighting.

- Use solar heating, automatic covers, and efficient pumps and motors for pools and spas.

- Provide education on energy efficiency.

Renewable Energy

- Install solar and tankless hot water heaters, and energy-efficient heating ventilation and air conditioning. Educate consumers about existing incentives.

- Install solar panels on carports and over parking areas.

- Use combined heat and power in appropriate applications.

Water Conservation and Efficiency

- Create water-efficient landscapes.

- Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls.

- Use reclaimed water for landscape irrigation in new developments and on public property. Install the infrastructure to deliver and use reclaimed water.

- Design buildings to be water-efficient. Install water-efficient fixtures and appliances.

- Restrict watering methods (*e.g.*, prohibit systems that apply water to non-vegetated surfaces) and control runoff.

- Restrict the use of water for cleaning outdoor surfaces and vehicles.

- Implement low-impact development practices that maintain the existing hydrologic character of the site to manage storm water and protect the environment. (Retaining storm water runoff on-site can drastically reduce the need for energy-intensive imported water at the site.)

- Devise a comprehensive water conservation strategy appropriate for the project and location. The strategy may include many of the specific items listed above, plus other innovative measures that are appropriate to the specific project.

- Provide education about water conservation and available programs and incentives.

Solid Waste Measures

- Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard).

- Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers located in public areas.

- Provide education and publicity about reducing waste and available recycling services.

Land Use Measures

- Include mixed-use, infill, and higher density in development projects to support the reduction of vehicle trips, promote alternatives to individual vehicle travel, and promote efficient delivery of services and goods.

- Educate the public about the benefits of well-designed, higher density development.

- Incorporate public transit into project design.

- Preserve and create open space and parks. Preserve existing trees, and plant replacement trees at a set ratio.

- Include pedestrian and bicycle-only streets and plazas within developments. Create travel routes that ensure that destinations may be reached conveniently by public transportation, bicycling or walking.

Transportation Measures

- Limit idling time for commercial vehicles, including delivery and construction vehicles.

- Use low or zero-emission vehicles, including construction vehicles.

- Promote ride sharing programs e.g., by designating a certain percentage of parking spaces for ride sharing, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles, and providing a web site or message board for coordinating rides.

- Create car-sharing programs. Accommodations for such programs include providing parking spaces for the car share vehicles at convenient locations accessible by public transportation.

- Create local “light vehicle” networks, such as neighborhood electric vehicle (NEV) systems.

- Provide the necessary facilities and infrastructure to encourage the use of low or zero-emission vehicles (e.g., electric charging facilities and conveniently located alternative fueling stations).

- Provide shuttle service to public transit.

- Provide public transit incentives such as free or low-cost monthly transit passes.

- Promote “least polluting” ways to connect people and goods to their destinations.

- Incorporate bicycle lanes and routes into street systems, new subdivisions and large developments.

- Incorporate bicycle-friendly intersections into street design.

- For commercial projects, provide adequate bicycle parking near building entrances to promote cyclist safety, security, and convenience. For large employers, provide facilities that encourage bicycle commuting, including, e.g., locked bicycle storage or covered or indoor bicycle parking.

- Create bicycle lanes and walking paths directed to the location of schools parks and other destination points.

- Work with the school district to restore or expand school bus services.

- Institute a telecommute work program. Provide information, training, and incentives to encourage participation. Provide incentives for equipment purchases to allow high-quality teleconferences.

- Provide information on all options for individuals and businesses to reduce transportation-related emissions. Provide education and information about public transportation.

6.6 Evaluation of Significance

Pursuant to the California Environmental Quality Act (CEQA), air quality impacts may be considered significant if:

a) ***A project conflicts with, or obstructs implementation of the applicable Air Quality Management Plan (AQMP).***

The applicable air quality plans, the Federal Particulate Matter Attainment Plan and Ozone Attainment Plan for the Mojave Desert set forth a comprehensive set of programs that will lead the Mojave Desert Air Basin into compliance with federal and state air quality standards. The control measures and reduction estimates established in these plans are based on projections for future developments derived from the local existing land use plans. According to the MDAQMD's CEQA

and Federal Conformity Guidelines (June 2007), a project is deemed not to exceed this significance threshold if it is consistent with the existing land use plan. However, it should be noted that zoning changes, specific plans, general plan amendments, and similar land use plan changes which do not increase dwelling unit density, vehicle trips, or vehicle miles traveled are also deemed not to exceed this threshold.

The majority of the project site is currently zoned RL-5 (Rural Living), with a maximum population density average of 343 persons per square mile and a minimum lot size of 5 acres. Portions of the project site are currently zoned RL-20 and RL-40. Because the proposed project would exceed the maximum population density for the site and proposes a more intense land use, *the project is considered not to be consistent with the applicable air quality management plans, and significant impacts may occur with regard to this threshold*. Additionally, it should be noted that although the proposed project exceeds significance thresholds established by the MDAQMD during construction and operational activity, the project specific plan requires the implementation of several "green" project design features aimed at increasing land use efficiency, transportation efficiency, energy efficiency, and water efficiency. A detailed list of project design features to be implemented by the project specific plan is presented in Section 6.0, as well as Appendix "F".

b) ***Project-generated emissions violate federal or state ambient air quality standards.***

The project area is designated a non-attainment area for ozone, PM_{10}, and $PM_{2.5}$. The analysis presented in this report indicates that long-term operational emissions will exceed MDAQMD significance thresholds for VOCs, NO_X, CO, PM_{10}, and $PM_{2.5}$ even with implementation of the recommended mitigation measures. Additionally, emissions resulting from short-term construction will exceed MDAQMD significance thresholds for emissions of NO_X and PM_{10}. As a result, *the project may potentially lead to or significantly contribute to existing violations of federal and/or state ambient air quality standards for ozone, PM_{10}, or $PM_{2.5}$*.

c) ***A project contributes a cumulatively considerable net increase of a criteria pollutant in a non-attainment area.***

The project area is designated as non-attainment for ozone, PM_{10}, and $PM_{2.5}$. *The results of the analysis indicate that the air quality impacts for the proposed project are significant on an individual project basis*. CEQA Section 2100 (e) addresses evaluation of cumulative effects allowing the use of approved land use documents in a cumulative impact analysis. CEQA

Guidelines Section 15064 (i) (3) indicate that for an impact involving a resource that is addressed by an approved plan or mitigation program, the lead agency may determine that a project's incremental contribution is not cumulatively considerable if the project complies with the adopted plan or program. In addressing cumulative effects for air quality, the AQMP is the most appropriate document to use due to its comprehensive nature in identifying a plan that is expected to lead the air basin (including the project area) into compliance with all federal and state ambient air quality standards.

Because the proposed project is not consistent with the applicable AQMP and project emissions are significant on an individual project basis, *it is assumed that the project's incremental contribution to criteria pollutant emissions may be cumulatively considerable*.

d) ***Project-generated emissions expose sensitive receptors to substantial pollutant concentrations.***

Based on MDAQMD guidance, a project is considered to have a significant impact on sensitive receptors if it proposes to locate any of the following land uses near sensitive receptors:

- Any industrial project within 1,000 feet;
- A distribution center (40 or more trucks per day) within 1,000 feet;
- A major transportation project (50,000 or more vehicles per day) within 1,000 feet;
- A dry cleaner using perchloroethylene within 500 feet;
- A gasoline dispensing facility within 300 feet.

It should be noted that although the proposed project contains a neighborhood retail element, it is not anticipated that this portion of the project will generate significant truck traffic. Because the proposed project does not plan to develop any of these land uses listed above, and does not plan to locate any sensitive receptors near any of these land uses, *the proposed project is not anticipated to result in a significant impact with regard to sensitive receptors.*

e) ***Project creates objectionable odors affecting a substantial number of people.***

Land uses generally associated with odor complaints include:

- Agricultural uses (livestock and farming)

- Wastewater treatment plants
- Food processing plants
- Chemical plants
- Composting operations
- Refineries
- Landfills
- Dairies
- Fiberglass molding facilities

The project does not contain land uses typically associated with emitting objectionable odors. Potential odor sources associated with the proposed project may result from construction equipment exhaust and the application of asphalt and architectural coatings during construction activities, and the temporary storage of typical solid waste (refuse) associated with the proposed project's (long-term operational) uses. Standard construction requirements would minimize odor impacts resulting from construction activity. It should be noted that any construction odor emissions generated would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction activity and is thus considered less than significant. It is expected that project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with the local agency's solid waste regulations. The proposed project would also be required to comply with MDAQMD Rule 402 to prevent occurrences of public nuisances. Therefore, *odors associated with the proposed project construction and operations would be less than significant and no mitigation is required*.

f) ***Project greenhouse gas emissions result in a significant impact on global climate change.***

Due to the worldwide scope of global climate change, it is not anticipated that any single development project would have a substantial effect on global climate change. No single development can be deemed individually responsible for global temperature increases and rising sea levels. California has created a strategy to deal with managing greenhouse gas emissions through Title 24 energy performance standards and regulatory requirements such as AB1493, AB1368, and AB32 that create design guidelines to ensure that each project in California does not contribute significantly to cumulative impacts. Since the project will comply

with Title 24 energy performance standards and applicable regulatory requirements aimed at reducing greenhouse gas emissions, and plans to implement numerous design features that will reduce direct and indirect greenhouse gas emissions through reduced energy use/consumption and reduced vehicle miles traveled, *impacts to global climate change resulting from the proposed project are less than significa*nt. Lastly, the project is compliant with all applicable CAT strategies to reduce California's emissions to levels proposed in Executive Order S-3-05 as well as mitigation measures identified by the California Attorney General's office.

6.7 Conclusion

The project-related short-term construction emissions burdens (after mitigation), along with a comparison of MDAQMD recommended significance thresholds, are shown in Table 6-1.

After the implementation of the recommended mitigation measures, emissions resulting from short-term construction activity will exceed the regional pollutant thresholds established by the MDAQMD for emissions of NO_X and PM_{10}.

Long-term operational project emissions, along with a comparison of MDAQMD recommended significance thresholds, are shown in Tables 6-2 (Phase 1) and 6-3 (Phase 2).

For regional emissions, after the implementation of the recommended mitigation measures, emissions resulting from long-term operational activity will exceed the regional pollutant threshold for emissions of VOCs, NO_X, CO, PM_{10}, and $PM_{2.5}$.

TABLE 6-1 (1 of 2)

EMISSIONS SUMMARY OF CONSTRUCTION ACTIVITIES
(POUNDS PER DAY) (WITH MITIGATION)

Phase 1 Construction		VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Village A							
Grading	Fugitive Dust	0	0	0	0	135.42	28.28
	Off-Road Equipment	3.78	71.43	71.34	0	3.03	3.06
	Worker Trips	0.12	0.23	3.86	0	0.03	0.02
Underground Utility Construction	Off-Road Equipment	1.479258	25.5725	25.88	0	1.34185	1.35326
	Worker Trips	0.08	0.15	2.48	0	0.02	0.01
Paving	Off-Gas Emissions	2.46	0	0	0	0	0
	Off-Road Equipment	0.77	10.68	11.45	0	0.80	0.81
	On-Road Diesel Equipment	0.76	10.36	3.78	0.01	0.46	0.39
	Worker Trips	0.04	0.08	1.38	0	0.01	0.01
Building Construction	Off-Road Equipment	1.92	29.54	31.29	0	1.96	1.97
	Vendor Trips	3.14	37.50	29.40	0.07	1.76	1.48
	Worker Trips	7.54	14.01	237.07	0.28	2.09	1.15
Architectural Coating	Off-Gas Emissions	80.75	0	0	0	0	0
	Worker Trips	0.11	0.21	3.52	0	0.03	0.02
Maximum Daily Emissions		**102.96**	**199.76**	**421.45**	**0.36**	**146.95**	**38.56**
MDAQMD Regional Threshold		137	137	548	137	82	55
Significant?		**NO**	**YES**	**NO**	**NO**	**YES**	**NO**

Phase 2 Construction		VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Village A							
Building Construction	Off-Road Equipment	1.92	29.54	31.29	0	1.96	1.97
	Vendor Trips	3.14	37.50	29.40	0.07	1.76	1.48
	Worker Trips	7.54	14.01	237.07	0.28	2.09	1.15
Architectural Coating	Off-Gas Emissions	80.75	0	0	0	0	0
	Worker Trips	0.11	0.21	3.52	0	0.03	0.02
Village B							
Grading	Fugitive Dust	0	0	0	0	135.42	28.28
	Off-Road Equipment	2.64	41.85	50.08	0	1.69	1.71
	Worker Trips	0.06	0.12	2.20	0	0.03	0.02
Underground Utility Construction	Equipment Emissions	0.945684	13.9652	21.93	0	0.64607	0.65432
	Worker Trips	0.04	0.08	1.42	0	0.02	0.01
Paving	Off-Gas Emissions	1.75	0	0	0	0	0
	Off-Road Equipment	0.51	6.65	10.60	0	0.48	0.49
	On-Road Diesel Equipment	0.28	3.08	1.19	0.01	0.14	0.11
	Worker Trips	0.02	0.04	0.79	0	0.01	0.01
Building Construction	Off-Road Equipment	1.09	15.33	28.99	0	0.82	0.82
	Vendor Trips	0.33	3.19	3.30	0.01	0.18	0.13
	Worker Trips	0.75	1.46	27.03	0.06	0.42	0.24
Architectural Coating	Off-Gas Emissions	13.88	0	0	0	0	0
	Worker Trips	0.01	0.02	0.40	0	0.01	0
Maximum Daily Emissions		**115.77**	**167.04**	**449.21**	**0.43**	**145.70**	**37.09**
MDAQMD Regional Threshold		137	137	548	137	82	55
Significant?		**NO**	**YES**	**NO**	**NO**	**YES**	**NO**

TABLE 6-1 (2 of 2)

EMISSIONS SUMMARY OF CONSTRUCTION ACTIVITIES
(POUNDS PER DAY) (WITH MITIGATION)

Phase 3 Construction		VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Village B							
Building Construction	Off-Road Equipment	1.09	15.33	28.99	0	0.82	0.82
	Vendor Trips	0.33	3.19	3.30	0.01	0.18	0.13
	Worker Trips	0.75	1.46	27.03	0.06	0.42	0.24
Architectural Coating	Off-Gas Emissions	13.88	0	0	0	0	0
	Worker Trips	0.01	0.02	0.40	0	0.01	0
Village C							
Grading	Fugitive Dust	0	0	0	0	135.42	28.28
	Off-Road Equipment	2.36	34.81	46.91	0	1.36	1.37
	Worker Trips	0.05	0.10	1.89	0	0.03	0.02
Underground Utility Construction	Equipment Emissions	0.822051	11.2848	21.42	0	0.5015	0.50561
	Worker Trips	0.03	0.06	1.21	0.02	0.01	0.01
Paving	Off-Gas Emissions	1.70	0	0	0	0	0
	Off-Road Equipment	0.44	5.68	10.46	0	0.40	0.41
	On-Road Diesel Equipment	0.23	2.39	0.95	0.01	0.11	0.08
	Worker Trips	0.02	0.04	0.67	0	0.01	0.01
Building Construction	Off-Road Equipment	0.93	12.28	28.77	0	0.61	0.61
	Vendor Trips	0.60	5.53	6.18	0.03	0.33	0.24
	Worker Trips	1.34	2.65	49.95	0.12	0.92	0.51
Architectural Coating	Off-Gas Emissions	29.94	0	0	0	0	0
	Worker Trips	0.02	0.04	0.74	0	0.01	0.01
Maximum Daily Emissions		**54.54**	**94.87**	**228.87**	**0.25**	**141.14**	**33.25**
MDAQMD Regional Threshold		137	137	548	137	82	55
Significant?		**NO**	**NO**	**NO**	**NO**	**YES**	**NO**

Phase 4 Construction		VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Village C							
Building Construction	Off-Road Equipment	0.93	12.28	28.77	0	0.61	0.61
	Vendor Trips	0.60	5.53	6.18	0.03	0.33	0.24
	Worker Trips	1.34	2.65	49.95	0.12	0.92	0.51
Architectural Coating	Off-Gas Emissions	29.94	0	0	0	0	0
	Worker Trips	0.02	0.04	0.74	0	0.01	0.01
Village D							
Grading	Fugitive Dust	0	0	0	0	135.42	28.28
	Off-Road Equipment	2.22	31.66	45.60	0	1.20	1.21
	Worker Trips	0.03	0.06	1.23	0	0.03	0.02
Underground Utility Construction	Off-Road Equipment	0.765657	10.1309	21.21	0	0.42017	0.4263
	Worker Trips	0.02	0.04	0.79	0	0.02	0.01
Paving	Off-Gas Emissions	2.77	0	0	0	0	0
	Off-Road Equipment	0.41	5.26	10.40	0	0.37	0.37
	On-Road Diesel Equipment	0.26	2.37	1.00	0.02	0.13	0.08
	Worker Trips	0.01	0.02	0.44	0	0.01	0.01
Building Construction	Off-Road Equipment	0.86	11.00	28.66	0	0.52	0.52
	Vendor Trips	0.50	4.03	5.32	0.03	0.30	0.20
	Worker Trips	0.91	1.94	38.91	0.14	1.09	0.61
Architectural Coating	Off-Gas Emissions	35.81	0	0	0	0	0
	Worker Trips	0.01	0.03	0.58	0	0.02	0.01
Maximum Daily Emissions		**77.40**	**87.04**	**239.78**	**0.34**	**141.39**	**33.13**
MDAQMD Regional Threshold		137	137	548	137	82	55
Significant?		**NO**	**NO**	**NO**	**NO**	**YES**	**NO**

Use of CARB Tier-II equipment reduces emissions of VOCs, NO_X, PM_{10}, and $PM_{2.5}$ by 78.31%, 54.57%, 54.82, and 50.43%, respectively.

Source: URBEMIS 2007 v. 9.2.4 Outputs

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TABLE 6-2

SUMMARY OF PHASE 1 (INTERIM) PEAK OPERATIONAL EMISSIONS (SUMMER)
(POUNDS PER DAY) (WITH MITIGATION)

Operational Activities	**VOC**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Vehicle Emissions	65.27	77.15	656.03	1.32	210.14	41.17
Natural Gas Use	2.42	31.35	13.81	0	0.06	0.06
Landscape Maintenance Emissions	13.98	0.90	79.07	0	0.21	0.21
Consumer Products	87.31	0	0	0	0	0
Architectural Coatings	7.32	0	0	0	0	0
Operational Emissions	**176.30**	**109.40**	**748.91**	**1.32**	**210.41**	**41.44**
MDAQMD Regional Threshold	137	137	548	137	82	55
Significant?	**YES**	**NO**	**YES**	**NO**	**YES**	**NO**

SUMMARY OF PHASE 1 (INTERIM) PEAK OPERATIONAL EMISSIONS (WINTER)
(POUNDS PER DAY) (WITH MITIGATION)

Operational Activities	**VOC**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Vehicle Emissions	68.34	91.77	629.50	1.11	210.14	41.17
Natural Gas Use	2.42	31.35	13.81	0	0.06	0.06
Fireplace Emissions	0.83	14.12	6.01	0.09	1.14	1.13
Landscape Maintenance Emissions	13.98	0.90	79.07	0	0.21	0.21
Consumer Products	87.31	0	0	0	0	0
Architectural Coatings	7.32	0	0	0	0	0
Operational Emissions	**180.20**	**138.14**	**728.39**	**1.20**	**211.55**	**42.57**
MDAQMD Regional Threshold	137	137	548	137	82	55
Significant?	**YES**	**YES**	**YES**	**NO**	**YES**	**NO**

Source: URBEMIS 2007 v 9.2.2 Outputs

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TABLE 6-3

SUMMARY OF PHASE 2 (BUILDOUT) PEAK OPERATIONAL EMISSIONS (SUMMER)
(POUNDS PER DAY) (WITH MITIGATION)

Operational Activities	**VOC**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Vehicle Emissions	77.08	72.88	696.58	2.02	316.58	61.69
Natural Gas Use	4.35	56.41	24.47	0	0.11	0.11
Landscape Maintenance Emissions	25.37	1.61	142.10	0	0.38	0.38
Consumer Products	159.75	0	0	0	0	0
Architectural Coatings	12.42	0	0	0	0	0
Operational Emissions	**278.97**	**130.90**	**863.15**	**2.03**	**317.07**	**62.18**
MDAQMD Regional Threshold	137	137	548	137	82	55
Significant?	**YES**	**NO**	**YES**	**NO**	**YES**	**YES**

SUMMARY OF PHASE 2 (BUILDOUT) PEAK OPERATIONAL EMISSIONS (WINTER)
(POUNDS PER DAY) (WITH MITIGATION)

Operational Activities	**VOC**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Vehicle Emissions	79.84	86.63	666.93	1.72	316.58	61.69
Natural Gas Use	4.35	56.41	24.47	0	0.11	0.11
Landscape Maintenance Emissions	25.37	1.61	142.10	0	0.38	0.38
Fireplace Emissions	1.51	25.83	10.99	0	2.09	2.07
Consumer Products	159.75	0	0	0	0	0
Architectural Coatings	12.42	0	0	0	0	0
Operational Emissions	**283.24**	**170.48**	**844.49**	**1.89**	**319.16**	**64.25**
MDAQMD Regional Threshold	137	137	548	137	82	55
Significant?	**YES**	**YES**	**YES**	**NO**	**YES**	**YES**

Source: URBEMIS 2007 v 9.2.2 Outputs

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APPENDIX A

Construction Impact Analysis

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\UcJobs_05600-06000\05900\05924\Urbemis\5924 Construction Village A.urb924

Project Name: Hacienda at Fairview Construction Village A

Project Location: San Bernadino County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
2010 TOTALS (lbs/day unmitigated)	131.67	364.58	421.45	0.37	401.62	18.59	420.20	84.11	17.02	101.14
2010 TOTALS (lbs/day mitigated)	131.67	364.58	421.45	0.37	137.04	18.59	155.63	28.86	17.02	45.88
2011 TOTALS (lbs/day unmitigated)	105.20	159.40	307.51	0.35	1.54	8.95	10.49	0.55	8.16	8.71
2011 TOTALS (lbs/day mitigated)	105.20	159.40	307.51	0.35	1.54	8.95	10.49	0.55	8.16	8.71

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 9/1/2010-10/15/2010 Active Days: 33	**131.67**	**364.58**	**421.45**	**0.37**	**401.62**	**18.59**	**420.20**	**84.11**	**17.02**	**101.14**
Asphalt 09/01/2010-10/16/2010	6.83	33.94	16.61	0.01	0.05	2.19	2.25	0.02	2.02	2.04
Paving Off-Gas	2.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	3.57	23.50	11.45	0.00	0.00	1.78	1.78	0.00	1.64	1.64
Paving On Road Diesel	0.76	10.36	3.78	0.01	0.05	0.41	0.46	0.02	0.38	0.39
Paving Worker Trips	0.04	0.08	1.38	0.00	0.01	0.00	0.01	0.00	0.00	0.01
Building 09/01/2010-09/30/2011	19.55	116.53	297.76	0.35	1.51	6.68	8.19	0.54	6.07	6.61
Building Off Road Diesel	8.87	65.02	31.29	0.00	0.00	4.33	4.33	0.00	3.98	3.98
Building Vendor Trips	3.14	37.50	29.40	0.07	0.25	1.52	1.76	0.08	1.39	1.48
Building Worker Trips	7.54	14.01	237.07	0.28	1.26	0.83	2.09	0.46	0.70	1.15
Coating 09/01/2010-09/30/2011	80.86	0.21	3.52	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Architectural Coating	80.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.11	0.21	3.52	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Fine Grading 09/01/2010-11/30/2010	17.54	157.46	75.20	0.00	400.02	6.73	406.75	83.54	6.19	89.73
Fine Grading Dust	0.00	0.00	0.00	0.00	400.00	0.00	400.00	83.54	0.00	83.54
Fine Grading Off Road Diesel	17.42	157.23	71.34	0.00	0.00	6.71	6.71	0.00	6.18	6.18
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.12	0.23	3.86	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 09/01/2010-02/28/2011	6.90	56.44	28.36	0.00	0.01	2.98	2.99	0.00	2.74	2.74
Trenching Off Road Diesel	6.82	56.29	25.88	0.00	0.00	2.97	2.97	0.00	2.73	2.73
Trenching Worker Trips	0.08	0.15	2.48	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 10/18/2010-11/30/2010 Active Days: 32	124.85	330.64	404.84	0.36	401.56	16.39	417.95	84.09	15.01	99.10
Building 09/01/2010-09/30/2011	19.55	116.53	297.76	0.35	1.51	6.68	8.19	0.54	6.07	6.61
Building Off Road Diesel	8.87	65.02	31.29	0.00	0.00	4.33	4.33	0.00	3.98	3.98
Building Vendor Trips	3.14	37.50	29.40	0.07	0.25	1.52	1.76	0.08	1.39	1.48
Building Worker Trips	7.54	14.01	237.07	0.28	1.26	0.83	2.09	0.46	0.70	1.15
Coating 09/01/2010-09/30/2011	80.86	0.21	3.52	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Architectural Coating	80.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.11	0.21	3.52	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Fine Grading 09/01/2010-11/30/2010	17.54	157.46	75.20	0.00	400.02	6.73	406.75	83.54	6.19	89.73

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Fine Grading Dust	0.00	0.00	0.00	0.00	400.00	0.00	400.00	83.54	0.00	83.54
Fine Grading Off Road Diesel	17.42	157.23	71.34	0.00	0.00	6.71	6.71	0.00	6.18	6.18
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.12	0.23	3.86	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 09/01/2010-02/28/2011	6.90	56.44	28.36	0.00	0.01	2.98	2.99	0.00	2.74	2.74
Trenching Off Road Diesel	6.82	56.29	25.88	0.00	0.00	2.97	2.97	0.00	2.73	2.73
Trenching Worker Trips	0.08	0.15	2.48	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 12/1/2010-12/31/2010 Active Days: 23	107.31	173.18	329.64	0.35	1.54	9.67	11.21	0.55	8.82	9.37
Building 09/01/2010-09/30/2011	19.55	116.53	297.76	0.35	1.51	6.68	8.19	0.54	6.07	6.61
Building Off Road Diesel	8.87	65.02	31.29	0.00	0.00	4.33	4.33	0.00	3.98	3.98
Building Vendor Trips	3.14	37.50	29.40	0.07	0.25	1.52	1.76	0.08	1.39	1.48
Building Worker Trips	7.54	14.01	237.07	0.28	1.26	0.83	2.09	0.46	0.70	1.15
Coating 09/01/2010-09/30/2011	80.86	0.21	3.52	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Architectural Coating	80.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.11	0.21	3.52	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 09/01/2010-02/28/2011	6.90	56.44	28.36	0.00	0.01	2.98	2.99	0.00	2.74	2.74
Trenching Off Road Diesel	6.82	56.29	25.88	0.00	0.00	2.97	2.97	0.00	2.73	2.73
Trenching Worker Trips	0.08	0.15	2.48	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 1/3/2011-2/28/2011 Active Days: 41	105.20	159.40	307.51	0.35	1.54	8.95	10.49	0.55	8.16	8.71
Building 09/01/2010-09/30/2011	17.93	106.66	276.92	0.35	1.51	6.19	7.70	0.54	5.62	6.16
Building Off Road Diesel	8.18	60.17	30.71	0.00	0.00	4.00	4.00	0.00	3.68	3.68
Building Vendor Trips	2.90	33.76	27.17	0.07	0.25	1.36	1.60	0.08	1.24	1.33
Building Worker Trips	6.86	12.73	219.04	0.28	1.26	0.83	2.09	0.46	0.70	1.15
Coating 09/01/2010-09/30/2011	80.85	0.19	3.25	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Architectural Coating	80.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.10	0.19	3.25	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 09/01/2010-02/28/2011	6.42	52.55	27.34	0.00	0.01	2.75	2.76	0.00	2.53	2.53
Trenching Off Road Diesel	6.35	52.42	25.05	0.00	0.00	2.74	2.74	0.00	2.52	2.52
Trenching Worker Trips	0.07	0.13	2.29	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 3/1/2011-9/30/2011 Active Days: 154	98.78	106.85	280.17	0.35	1.53	6.20	7.73	0.55	5.63	6.18
Building 09/01/2010-09/30/2011	17.93	106.66	276.92	0.35	1.51	6.19	7.70	0.54	5.62	6.16
Building Off Road Diesel	8.18	60.17	30.71	0.00	0.00	4.00	4.00	0.00	3.68	3.68
Building Vendor Trips	2.90	33.76	27.17	0.07	0.25	1.36	1.60	0.08	1.24	1.33
Building Worker Trips	6.86	12.73	219.04	0.28	1.26	0.83	2.09	0.46	0.70	1.15
Coating 09/01/2010-09/30/2011	80.85	0.19	3.25	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Architectural Coating	80.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.10	0.19	3.25	0.00	0.02	0.01	0.03	0.01	0.01	0.02

Phase Assumptions

Phase: Fine Grading 9/1/2010 - 11/30/2010 - Phase 1 Grading

Total Acres Disturbed: 410

Maximum Daily Acreage Disturbed: 20

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

5 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

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4 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 9/1/2010 - 2/28/2011 - Phase 1 Underground Utility Construction
Off-Road Equipment:
1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
1 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
3 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 9/1/2010 - 10/16/2010 - Phase 1 Paving
Acres to be Paved: 31
Off-Road Equipment:
2 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 9/1/2010 - 9/30/2011 - Phase 1 Building Construction
Off-Road Equipment:
5 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
3 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day
5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
5 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Architectural Coating 9/1/2010 - 9/30/2011 - Phase 1 Architectural Coating
Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100
Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50
Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250
Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:
CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 9/1/2010-10/15/2010 Active Days: 33	**131.67**	**364.58**	**421.45**	**0.37**	137.04	**18.59**	155.63	28.86	**17.02**	45.88
Asphalt 09/01/2010-10/16/2010	6.83	33.94	16.61	0.01	0.05	2.19	2.25	0.02	2.02	2.04
Paving Off-Gas	2.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	3.57	23.50	11.45	0.00	0.00	1.78	1.78	0.00	1.64	1.64
Paving On Road Diesel	0.76	10.36	3.78	0.01	0.05	0.41	0.46	0.02	0.38	0.39
Paving Worker Trips	0.04	0.08	1.38	0.00	0.01	0.00	0.01	0.00	0.00	0.01
Building 09/01/2010-09/30/2011	19.55	116.53	297.76	0.35	1.51	6.68	8.19	0.54	6.07	6.61
Building Off Road Diesel	8.87	65.02	31.29	0.00	0.00	4.33	4.33	0.00	3.98	3.98
Building Vendor Trips	3.14	37.50	29.40	0.07	0.25	1.52	1.76	0.08	1.39	1.48
Building Worker Trips	7.54	14.01	237.07	0.28	1.26	0.83	2.09	0.46	0.70	1.15
Coating 09/01/2010-09/30/2011	80.86	0.21	3.52	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Architectural Coating	80.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.11	0.21	3.52	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Fine Grading 09/01/2010-11/30/2010	17.54	157.46	75.20	0.00	135.44	6.73	142.17	28.29	6.19	34.48
Fine Grading Dust	0.00	0.00	0.00	0.00	135.42	0.00	135.42	28.28	0.00	28.28
Fine Grading Off Road Diesel	17.42	157.23	71.34	0.00	0.00	6.71	6.71	0.00	6.18	6.18
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.12	0.23	3.86	0.00	0.02	0.01	0.03	0.01	0.01	0.02

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Trenching 09/01/2010-02/28/2011	6.90	56.44	28.36	0.00	0.01	2.98	2.99	0.00	2.74	2.74
Trenching Off Road Diesel	6.82	56.29	25.88	0.00	0.00	2.97	2.97	0.00	2.73	2.73
Trenching Worker Trips	0.08	0.15	2.48	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 10/18/2010-11/30/2010 Active Days: 32	124.85	330.64	404.84	0.36	136.98	16.39	153.38	28.84	15.01	43.85
Building 09/01/2010-09/30/2011	19.55	116.53	297.76	0.35	1.51	6.68	8.19	0.54	6.07	6.61
Building Off Road Diesel	8.87	65.02	31.29	0.00	0.00	4.33	4.33	0.00	3.98	3.98
Building Vendor Trips	3.14	37.50	29.40	0.07	0.25	1.52	1.76	0.08	1.39	1.48
Building Worker Trips	7.54	14.01	237.07	0.28	1.26	0.83	2.09	0.46	0.70	1.15
Coating 09/01/2010-09/30/2011	80.86	0.21	3.52	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Architectural Coating	80.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.11	0.21	3.52	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Fine Grading 09/01/2010-11/30/2010	17.54	157.46	75.20	0.00	135.44	6.73	142.17	28.29	6.19	34.48
Fine Grading Dust	0.00	0.00	0.00	0.00	135.42	0.00	135.42	28.28	0.00	28.28
Fine Grading Off Road Diesel	17.42	157.23	71.34	0.00	0.00	6.71	6.71	0.00	6.18	6.18
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.12	0.23	3.86	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 09/01/2010-02/28/2011	6.90	56.44	28.36	0.00	0.01	2.98	2.99	0.00	2.74	2.74
Trenching Off Road Diesel	6.82	56.29	25.88	0.00	0.00	2.97	2.97	0.00	2.73	2.73
Trenching Worker Trips	0.08	0.15	2.48	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 12/1/2010-12/31/2010 Active Days: 23	107.31	173.18	329.64	0.35	1.54	9.67	11.21	0.55	8.82	9.37
Building 09/01/2010-09/30/2011	19.55	116.53	297.76	0.35	1.51	6.68	8.19	0.54	6.07	6.61
Building Off Road Diesel	8.87	65.02	31.29	0.00	0.00	4.33	4.33	0.00	3.98	3.98
Building Vendor Trips	3.14	37.50	29.40	0.07	0.25	1.52	1.76	0.08	1.39	1.48
Building Worker Trips	7.54	14.01	237.07	0.28	1.26	0.83	2.09	0.46	0.70	1.15
Coating 09/01/2010-09/30/2011	80.86	0.21	3.52	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Architectural Coating	80.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.11	0.21	3.52	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 09/01/2010-02/28/2011	6.90	56.44	28.36	0.00	0.01	2.98	2.99	0.00	2.74	2.74
Trenching Off Road Diesel	6.82	56.29	25.88	0.00	0.00	2.97	2.97	0.00	2.73	2.73
Trenching Worker Trips	0.08	0.15	2.48	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 1/3/2011-2/28/2011 Active Days: 41	105.20	159.40	307.51	0.35	1.54	8.95	10.49	0.55	8.16	8.71
Building 09/01/2010-09/30/2011	17.93	106.66	276.92	0.35	1.51	6.19	7.70	0.54	5.62	6.16
Building Off Road Diesel	8.18	60.17	30.71	0.00	0.00	4.00	4.00	0.00	3.68	3.68
Building Vendor Trips	2.90	33.76	27.17	0.07	0.25	1.36	1.60	0.08	1.24	1.33
Building Worker Trips	6.86	12.73	219.04	0.28	1.26	0.83	2.09	0.46	0.70	1.15
Coating 09/01/2010-09/30/2011	80.85	0.19	3.25	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Architectural Coating	80.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.10	0.19	3.25	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 09/01/2010-02/28/2011	6.42	52.55	27.34	0.00	0.01	2.75	2.76	0.00	2.53	2.53
Trenching Off Road Diesel	6.35	52.42	25.05	0.00	0.00	2.74	2.74	0.00	2.52	2.52
Trenching Worker Trips	0.07	0.13	2.29	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 3/1/2011-9/30/2011 Active Days: 154	98.78	106.85	280.17	0.35	1.53	6.20	7.73	0.55	5.63	6.18
Building 09/01/2010-09/30/2011	17.93	106.66	276.92	0.35	1.51	6.19	7.70	0.54	5.62	6.16
Building Off Road Diesel	8.18	60.17	30.71	0.00	0.00	4.00	4.00	0.00	3.68	3.68
Building Vendor Trips	2.90	33.76	27.17	0.07	0.25	1.36	1.60	0.08	1.24	1.33
Building Worker Trips	6.86	12.73	219.04	0.28	1.26	0.83	2.09	0.46	0.70	1.15
Coating 09/01/2010-09/30/2011	80.85	0.19	3.25	0.00	0.02	0.01	0.03	0.01	0.01	0.02

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Architectural Coating	80.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.10	0.19	3.25	0.00	0.02	0.01	0.03	0.01	0.01	0.02

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 9/1/2010 - 11/30/2010 - Phase 1 Grading

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\UcJobs_05600-06000\05900\05924\Urbemis\5924 Construction Village B.urb924

Project Name: Hacienda at Fairview Construction Village B

Project Location: San Bernadino County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
2017 TOTALS (lbs/day unmitigated)	41.01	179.22	147.92	0.09	400.38	8.48	408.86	83.67	7.79	91.46
2017 TOTALS (lbs/day mitigated)	41.01	179.22	147.92	0.09	135.80	8.48	144.28	28.42	7.79	36.20
2018 TOTALS (lbs/day unmitigated)	19.44	34.45	57.34	0.07	0.30	1.84	2.15	0.11	1.68	1.79
2018 TOTALS (lbs/day mitigated)	19.44	34.45	57.34	0.07	0.30	1.84	2.15	0.11	1.68	1.79

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 1/2/2017-2/17/2017 Active Days: 35	**41.01**	**179.22**	**147.92**	**0.09**	**400.38**	**8.48**	**408.86**	**83.67**	**7.79**	**91.46**
Asphalt 01/01/2017-02/18/2017	4.39	17.75	12.58	0.01	0.04	1.18	1.22	0.01	1.09	1.10
Paving Off-Gas	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.34	14.63	10.60	0.00	0.00	1.07	1.07	0.00	0.98	0.98
Paving On Road Diesel	0.28	3.08	1.19	0.01	0.03	0.11	0.14	0.01	0.10	0.11
Paving Worker Trips	0.02	0.04	0.79	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Building 01/01/2017-01/31/2018	6.11	38.40	59.31	0.07	0.30	2.11	2.41	0.11	1.92	2.03
Building Off Road Diesel	5.03	33.74	28.99	0.00	0.00	1.81	1.81	0.00	1.66	1.66
Building Vendor Trips	0.33	3.19	3.30	0.01	0.05	0.13	0.18	0.02	0.12	0.13
Building Worker Trips	0.75	1.46	27.03	0.06	0.25	0.17	0.42	0.09	0.14	0.24
Coating 01/01/2017-01/31/2018	13.89	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Architectural Coating	13.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Fine Grading 01/01/2017-03/31/2017	12.24	92.25	52.28	0.00	400.02	3.75	403.77	83.54	3.45	86.99
Fine Grading Dust	0.00	0.00	0.00	0.00	400.00	0.00	400.00	83.54	0.00	83.54
Fine Grading Off Road Diesel	12.18	92.13	50.08	0.00	0.00	3.74	3.74	0.00	3.44	3.44
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.12	2.20	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 01/01/2017-06/30/2017	4.40	30.81	23.35	0.00	0.01	1.44	1.45	0.00	1.32	1.33
Trenching Off Road Diesel	4.36	30.74	21.93	0.00	0.00	1.43	1.43	0.00	1.32	1.32
Trenching Worker Trips	0.04	0.08	1.42	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 2/20/2017-3/31/2017 Active Days: 30	36.63	161.48	135.34	0.08	400.34	7.30	407.64	83.66	6.70	90.36
Building 01/01/2017-01/31/2018	6.11	38.40	59.31	0.07	0.30	2.11	2.41	0.11	1.92	2.03
Building Off Road Diesel	5.03	33.74	28.99	0.00	0.00	1.81	1.81	0.00	1.66	1.66
Building Vendor Trips	0.33	3.19	3.30	0.01	0.05	0.13	0.18	0.02	0.12	0.13
Building Worker Trips	0.75	1.46	27.03	0.06	0.25	0.17	0.42	0.09	0.14	0.24
Coating 01/01/2017-01/31/2018	13.89	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Architectural Coating	13.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Fine Grading 01/01/2017-03/31/2017	12.24	92.25	52.28	0.00	400.02	3.75	403.77	83.54	3.45	86.99

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Fine Grading Dust	0.00	0.00	0.00	0.00	400.00	0.00	400.00	83.54	0.00	83.54
Fine Grading Off Road Diesel	12.18	92.13	50.08	0.00	0.00	3.74	3.74	0.00	3.44	3.44
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.12	2.20	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 01/01/2017-06/30/2017	4.40	30.81	23.35	0.00	0.01	1.44	1.45	0.00	1.32	1.33
Trenching Off Road Diesel	4.36	30.74	21.93	0.00	0.00	1.43	1.43	0.00	1.32	1.32
Trenching Worker Trips	0.04	0.08	1.42	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 4/3/2017-6/30/2017 Active Days: 65	24.39	69.23	83.06	0.07	0.32	3.55	3.87	0.11	3.25	3.36
Building 01/01/2017-01/31/2018	6.11	38.40	59.31	0.07	0.30	2.11	2.41	0.11	1.92	2.03
Building Off Road Diesel	5.03	33.74	28.99	0.00	0.00	1.81	1.81	0.00	1.66	1.66
Building Vendor Trips	0.33	3.19	3.30	0.01	0.05	0.13	0.18	0.02	0.12	0.13
Building Worker Trips	0.75	1.46	27.03	0.06	0.25	0.17	0.42	0.09	0.14	0.24
Coating 01/01/2017-01/31/2018	13.89	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Architectural Coating	13.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 01/01/2017-06/30/2017	4.40	30.81	23.35	0.00	0.01	1.44	1.45	0.00	1.32	1.33
Trenching Off Road Diesel	4.36	30.74	21.93	0.00	0.00	1.43	1.43	0.00	1.32	1.32
Trenching Worker Trips	0.04	0.08	1.42	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 7/3/2017-12/29/2017 Active Days: 130	19.99	38.42	59.71	0.07	0.30	2.11	2.41	0.11	1.92	2.03
Building 01/01/2017-01/31/2018	6.11	38.40	59.31	0.07	0.30	2.11	2.41	0.11	1.92	2.03
Building Off Road Diesel	5.03	33.74	28.99	0.00	0.00	1.81	1.81	0.00	1.66	1.66
Building Vendor Trips	0.33	3.19	3.30	0.01	0.05	0.13	0.18	0.02	0.12	0.13
Building Worker Trips	0.75	1.46	27.03	0.06	0.25	0.17	0.42	0.09	0.14	0.24
Coating 01/01/2017-01/31/2018	13.89	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Architectural Coating	13.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/1/2018-1/31/2018 Active Days: 23	19.44	34.45	57.34	0.07	0.30	1.84	2.15	0.11	1.68	1.79
Building 01/01/2017-01/31/2018	5.55	34.43	56.96	0.07	0.30	1.84	2.14	0.11	1.68	1.78
Building Off Road Diesel	4.57	30.25	28.91	0.00	0.00	1.55	1.55	0.00	1.43	1.43
Building Vendor Trips	0.30	2.85	3.07	0.01	0.05	0.11	0.16	0.02	0.10	0.12
Building Worker Trips	0.68	1.33	24.99	0.06	0.25	0.17	0.42	0.09	0.14	0.24
Coating 01/01/2017-01/31/2018	13.89	0.02	0.37	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Architectural Coating	13.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.37	0.00	0.00	0.00	0.01	0.00	0.00	0.00

Phase Assumptions

Phase: Fine Grading 1/1/2017 - 3/31/2017 - Phase 2 Grading

Total Acres Disturbed: 111

Maximum Daily Acreage Disturbed: 20

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

5 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

4 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 1/1/2017 - 6/30/2017 - Phase 2 Underground Utility Construction

Off-Road Equipment:

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1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
1 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
3 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 1/1/2017 - 2/18/2017 - Phase 2 Paving
Acres to be Paved: 24
Off-Road Equipment:
2 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 1/1/2017 - 1/31/2018 - Phase 2 Building Construction
Off-Road Equipment:
5 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
3 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day
5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
5 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Architectural Coating 1/1/2017 - 1/31/2018 - Phase 2 Architectural Coating
Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100
Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50
Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250
Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:
CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 1/2/2017-2/17/2017 Active Days: 35	**41.01**	**179.22**	**147.92**	**0.09**	135.80	**8.48**	144.28	28.42	**7.79**	36.20
Asphalt 01/01/2017-02/18/2017	4.39	17.75	12.58	0.01	0.04	1.18	1.22	0.01	1.09	1.10
Paving Off-Gas	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.34	14.63	10.60	0.00	0.00	1.07	1.07	0.00	0.98	0.98
Paving On Road Diesel	0.28	3.08	1.19	0.01	0.03	0.11	0.14	0.01	0.10	0.11
Paving Worker Trips	0.02	0.04	0.79	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Building 01/01/2017-01/31/2018	6.11	38.40	59.31	0.07	0.30	2.11	2.41	0.11	1.92	2.03
Building Off Road Diesel	5.03	33.74	28.99	0.00	0.00	1.81	1.81	0.00	1.66	1.66
Building Vendor Trips	0.33	3.19	3.30	0.01	0.05	0.13	0.18	0.02	0.12	0.13
Building Worker Trips	0.75	1.46	27.03	0.06	0.25	0.17	0.42	0.09	0.14	0.24
Coating 01/01/2017-01/31/2018	13.89	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Architectural Coating	13.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Fine Grading 01/01/2017-03/31/2017	12.24	92.25	52.28	0.00	135.44	3.75	139.19	28.29	3.45	31.74
Fine Grading Dust	0.00	0.00	0.00	0.00	135.42	0.00	135.42	28.28	0.00	28.28
Fine Grading Off Road Diesel	12.18	92.13	50.08	0.00	0.00	3.74	3.74	0.00	3.44	3.44
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.12	2.20	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 01/01/2017-06/30/2017	4.40	30.81	23.35	0.00	0.01	1.44	1.45	0.00	1.32	1.33
Trenching Off Road Diesel	4.36	30.74	21.93	0.00	0.00	1.43	1.43	0.00	1.32	1.32
Trenching Worker Trips	0.04	0.08	1.42	0.00	0.01	0.01	0.02	0.00	0.01	0.01

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Time Slice 2/20/2017-3/31/2017 Active Days: 30	36.63	161.48	135.34	0.08	135.76	7.30	143.06	28.40	6.70	35.10
Building 01/01/2017-01/31/2018	6.11	38.40	59.31	0.07	0.30	2.11	2.41	0.11	1.92	2.03
Building Off Road Diesel	5.03	33.74	28.99	0.00	0.00	1.81	1.81	0.00	1.66	1.66
Building Vendor Trips	0.33	3.19	3.30	0.01	0.05	0.13	0.18	0.02	0.12	0.13
Building Worker Trips	0.75	1.46	27.03	0.06	0.25	0.17	0.42	0.09	0.14	0.24
Coating 01/01/2017-01/31/2018	13.89	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Architectural Coating	13.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Fine Grading 01/01/2017-03/31/2017	12.24	92.25	52.28	0.00	135.44	3.75	139.19	28.29	3.45	31.74
Fine Grading Dust	0.00	0.00	0.00	0.00	135.42	0.00	135.42	28.28	0.00	28.28
Fine Grading Off Road Diesel	12.18	92.13	50.08	0.00	0.00	3.74	3.74	0.00	3.44	3.44
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.06	0.12	2.20	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 01/01/2017-06/30/2017	4.40	30.81	23.35	0.00	0.01	1.44	1.45	0.00	1.32	1.33
Trenching Off Road Diesel	4.36	30.74	21.93	0.00	0.00	1.43	1.43	0.00	1.32	1.32
Trenching Worker Trips	0.04	0.08	1.42	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 4/3/2017-6/30/2017 Active Days: 65	24.39	69.23	83.06	0.07	0.32	3.55	3.87	0.11	3.25	3.36
Building 01/01/2017-01/31/2018	6.11	38.40	59.31	0.07	0.30	2.11	2.41	0.11	1.92	2.03
Building Off Road Diesel	5.03	33.74	28.99	0.00	0.00	1.81	1.81	0.00	1.66	1.66
Building Vendor Trips	0.33	3.19	3.30	0.01	0.05	0.13	0.18	0.02	0.12	0.13
Building Worker Trips	0.75	1.46	27.03	0.06	0.25	0.17	0.42	0.09	0.14	0.24
Coating 01/01/2017-01/31/2018	13.89	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Architectural Coating	13.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Trenching 01/01/2017-06/30/2017	4.40	30.81	23.35	0.00	0.01	1.44	1.45	0.00	1.32	1.33
Trenching Off Road Diesel	4.36	30.74	21.93	0.00	0.00	1.43	1.43	0.00	1.32	1.32
Trenching Worker Trips	0.04	0.08	1.42	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 7/3/2017-12/29/2017 Active Days: 130	19.99	38.42	59.71	0.07	0.30	2.11	2.41	0.11	1.92	2.03
Building 01/01/2017-01/31/2018	6.11	38.40	59.31	0.07	0.30	2.11	2.41	0.11	1.92	2.03
Building Off Road Diesel	5.03	33.74	28.99	0.00	0.00	1.81	1.81	0.00	1.66	1.66
Building Vendor Trips	0.33	3.19	3.30	0.01	0.05	0.13	0.18	0.02	0.12	0.13
Building Worker Trips	0.75	1.46	27.03	0.06	0.25	0.17	0.42	0.09	0.14	0.24
Coating 01/01/2017-01/31/2018	13.89	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Architectural Coating	13.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/1/2018-1/31/2018 Active Days: 23	19.44	34.45	57.34	0.07	0.30	1.84	2.15	0.11	1.68	1.79
Building 01/01/2017-01/31/2018	5.55	34.43	56.96	0.07	0.30	1.84	2.14	0.11	1.68	1.78
Building Off Road Diesel	4.57	30.25	28.91	0.00	0.00	1.55	1.55	0.00	1.43	1.43
Building Vendor Trips	0.30	2.85	3.07	0.01	0.05	0.11	0.16	0.02	0.10	0.12
Building Worker Trips	0.68	1.33	24.99	0.06	0.25	0.17	0.42	0.09	0.14	0.24
Coating 01/01/2017-01/31/2018	13.89	0.02	0.37	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Architectural Coating	13.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.02	0.37	0.00	0.00	0.00	0.01	0.00	0.00	0.00

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 1/1/2017 - 3/31/2017 - Phase 2 Grading

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

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PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\UcJobs_05600-06000\05900\05924\Urbemis\5924 Construction Village C.urb924

Project Name: Hacienda at Fairview Construction Village C

Project Location: San Bernadino County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
2019 TOTALS (lbs/day unmitigated)	54.88	151.82	169.15	0.17	400.73	7.06	407.80	83.80	6.46	90.26
2019 TOTALS (lbs/day mitigated)	54.88	151.82	169.15	0.17	136.16	7.06	143.22	28.54	6.46	35.01
2020 TOTALS (lbs/day unmitigated)	35.68	31.67	81.31	0.15	0.66	1.72	2.38	0.24	1.55	1.79
2020 TOTALS (lbs/day mitigated)	35.68	31.67	81.31	0.15	0.66	1.72	2.38	0.24	1.55	1.79

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 1/1/2019-2/15/2019 Active Days: 34	**54.88**	**151.82**	**169.15**	**0.17**	**400.73**	**7.06**	**407.80**	**83.80**	**6.46**	**90.26**
Asphalt 01/01/2019-02/16/2019	3.97	14.94	12.08	0.01	0.04	0.98	1.02	0.01	0.90	0.91
Paving Off-Gas	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.02	12.51	10.46	0.00	0.00	0.89	0.89	0.00	0.82	0.82
Paving On Road Diesel	0.23	2.39	0.95	0.01	0.03	0.08	0.11	0.01	0.07	0.08
Paving Worker Trips	0.02	0.04	0.67	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Building 01/01/2019-01/31/2020	6.21	35.20	84.90	0.15	0.65	1.94	2.59	0.23	1.75	1.98
Building Off Road Diesel	4.27	27.03	28.77	0.00	0.00	1.34	1.34	0.00	1.24	1.24
Building Vendor Trips	0.60	5.53	6.18	0.03	0.11	0.22	0.33	0.04	0.20	0.24
Building Worker Trips	1.34	2.65	49.95	0.12	0.54	0.37	0.92	0.20	0.31	0.51
Coating 01/01/2019-01/31/2020	29.96	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Architectural Coating	29.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Fine Grading 01/01/2019-03/31/2019	10.92	76.73	48.80	0.00	400.02	3.03	403.05	83.54	2.79	86.33
Fine Grading Dust	0.00	0.00	0.00	0.00	400.00	0.00	400.00	83.54	0.00	83.54
Fine Grading Off Road Diesel	10.87	76.63	46.91	0.00	0.00	3.02	3.02	0.00	2.77	2.77
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.05	0.10	1.89	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 01/01/2019-06/30/2019	3.82	24.90	22.63	0.00	0.01	1.11	1.13	0.00	1.02	1.03
Trenching Off Road Diesel	3.79	24.84	21.42	0.00	0.00	1.11	1.11	0.00	1.02	1.02
Trenching Worker Trips	0.03	0.06	1.21	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 2/18/2019-3/29/2019 Active Days: 30	50.92	136.88	157.07	0.16	400.69	6.09	406.78	83.78	5.57	89.35
Building 01/01/2019-01/31/2020	6.21	35.20	84.90	0.15	0.65	1.94	2.59	0.23	1.75	1.98
Building Off Road Diesel	4.27	27.03	28.77	0.00	0.00	1.34	1.34	0.00	1.24	1.24
Building Vendor Trips	0.60	5.53	6.18	0.03	0.11	0.22	0.33	0.04	0.20	0.24
Building Worker Trips	1.34	2.65	49.95	0.12	0.54	0.37	0.92	0.20	0.31	0.51
Coating 01/01/2019-01/31/2020	29.96	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Architectural Coating	29.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Fine Grading 01/01/2019-03/31/2019	10.92	76.73	48.80	0.00	400.02	3.03	403.05	83.54	2.79	86.33

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Fine Grading Dust	0.00	0.00	0.00	0.00	400.00	0.00	400.00	83.54	0.00	83.54
Fine Grading Off Road Diesel	10.87	76.63	46.91	0.00	0.00	3.02	3.02	0.00	2.77	2.77
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.05	0.10	1.89	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 01/01/2019-06/30/2019	3.82	24.90	22.63	0.00	0.01	1.11	1.13	0.00	1.02	1.03
Trenching Off Road Diesel	3.79	24.84	21.42	0.00	0.00	1.11	1.11	0.00	1.02	1.02
Trenching Worker Trips	0.03	0.06	1.21	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 4/1/2019-6/28/2019 Active Days: 65	40.00	60.15	108.27	0.15	0.67	3.06	3.73	0.24	2.78	3.02
Building 01/01/2019-01/31/2020	6.21	35.20	84.90	0.15	0.65	1.94	2.59	0.23	1.75	1.98
Building Off Road Diesel	4.27	27.03	28.77	0.00	0.00	1.34	1.34	0.00	1.24	1.24
Building Vendor Trips	0.60	5.53	6.18	0.03	0.11	0.22	0.33	0.04	0.20	0.24
Building Worker Trips	1.34	2.65	49.95	0.12	0.54	0.37	0.92	0.20	0.31	0.51
Coating 01/01/2019-01/31/2020	29.96	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Architectural Coating	29.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Trenching 01/01/2019-06/30/2019	3.82	24.90	22.63	0.00	0.01	1.11	1.13	0.00	1.02	1.03
Trenching Off Road Diesel	3.79	24.84	21.42	0.00	0.00	1.11	1.11	0.00	1.02	1.02
Trenching Worker Trips	0.03	0.06	1.21	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 7/1/2019-12/31/2019 Active Days: 132	36.18	35.24	85.64	0.15	0.66	1.94	2.60	0.24	1.76	1.99
Building 01/01/2019-01/31/2020	6.21	35.20	84.90	0.15	0.65	1.94	2.59	0.23	1.75	1.98
Building Off Road Diesel	4.27	27.03	28.77	0.00	0.00	1.34	1.34	0.00	1.24	1.24
Building Vendor Trips	0.60	5.53	6.18	0.03	0.11	0.22	0.33	0.04	0.20	0.24
Building Worker Trips	1.34	2.65	49.95	0.12	0.54	0.37	0.92	0.20	0.31	0.51
Coating 01/01/2019-01/31/2020	29.96	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Architectural Coating	29.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Time Slice 1/1/2020-1/31/2020 Active Days: 23	35.68	31.67	81.31	0.15	0.66	1.72	2.38	0.24	1.55	1.79
Building 01/01/2019-01/31/2020	5.72	31.64	80.62	0.15	0.65	1.72	2.37	0.23	1.55	1.78
Building Off Road Diesel	3.95	24.21	28.66	0.00	0.00	1.14	1.14	0.00	1.05	1.05
Building Vendor Trips	0.56	5.01	5.79	0.03	0.11	0.20	0.31	0.04	0.18	0.22
Building Worker Trips	1.21	2.42	46.18	0.12	0.54	0.37	0.92	0.20	0.31	0.51
Coating 01/01/2019-01/31/2020	29.96	0.04	0.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Architectural Coating	29.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01

Phase Assumptions

Phase: Fine Grading 1/1/2019 - 3/31/2019 - Phase 3 Grading

Total Acres Disturbed: 166

Maximum Daily Acreage Disturbed: 20

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

5 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

4 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 1/1/2019 - 6/30/2019 - Phase 3 Underground Utility Construction

Off-Road Equipment:

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1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
1 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
3 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 1/1/2019 - 2/16/2019 - Phase 3 Paving
Acres to be Paved: 22
Off-Road Equipment:
2 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 1/1/2019 - 1/31/2020 - Phase 3 Building Construction
Off-Road Equipment:
5 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
3 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day
5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
5 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Architectural Coating 1/1/2019 - 1/31/2020 - Phase 3 Architectural Coating
Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100
Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50
Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250
Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 1/1/2019-2/15/2019 Active Days: 34	**54.88**	**151.82**	**169.15**	**0.17**	136.16	**7.06**	143.22	28.54	**6.46**	35.01
Asphalt 01/01/2019-02/16/2019	3.97	14.94	12.08	0.01	0.04	0.98	1.02	0.01	0.90	0.91
Paving Off-Gas	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.02	12.51	10.46	0.00	0.00	0.89	0.89	0.00	0.82	0.82
Paving On Road Diesel	0.23	2.39	0.95	0.01	0.03	0.08	0.11	0.01	0.07	0.08
Paving Worker Trips	0.02	0.04	0.67	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Building 01/01/2019-01/31/2020	6.21	35.20	84.90	0.15	0.65	1.94	2.59	0.23	1.75	1.98
Building Off Road Diesel	4.27	27.03	28.77	0.00	0.00	1.34	1.34	0.00	1.24	1.24
Building Vendor Trips	0.60	5.53	6.18	0.03	0.11	0.22	0.33	0.04	0.20	0.24
Building Worker Trips	1.34	2.65	49.95	0.12	0.54	0.37	0.92	0.20	0.31	0.51
Coating 01/01/2019-01/31/2020	29.96	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Architectural Coating	29.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Fine Grading 01/01/2019-03/31/2019	10.92	76.73	48.80	0.00	135.44	3.03	138.47	28.29	2.79	31.08
Fine Grading Dust	0.00	0.00	0.00	0.00	135.42	0.00	135.42	28.28	0.00	28.28
Fine Grading Off Road Diesel	10.87	76.63	46.91	0.00	0.00	3.02	3.02	0.00	2.77	2.77
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.05	0.10	1.89	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 01/01/2019-06/30/2019	3.82	24.90	22.63	0.00	0.01	1.11	1.13	0.00	1.02	1.03
Trenching Off Road Diesel	3.79	24.84	21.42	0.00	0.00	1.11	1.11	0.00	1.02	1.02
Trenching Worker Trips	0.03	0.06	1.21	0.00	0.01	0.01	0.02	0.00	0.01	0.01

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Time Slice 2/18/2019-3/29/2019 Active Days: 30	50.92	136.88	157.07	0.16	136.12	6.09	142.20	28.53	5.57	34.10
Building 01/01/2019-01/31/2020	6.21	35.20	84.90	0.15	0.65	1.94	2.59	0.23	1.75	1.98
Building Off Road Diesel	4.27	27.03	28.77	0.00	0.00	1.34	1.34	0.00	1.24	1.24
Building Vendor Trips	0.60	5.53	6.18	0.03	0.11	0.22	0.33	0.04	0.20	0.24
Building Worker Trips	1.34	2.65	49.95	0.12	0.54	0.37	0.92	0.20	0.31	0.51
Coating 01/01/2019-01/31/2020	29.96	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Architectural Coating	29.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Fine Grading 01/01/2019-03/31/2019	10.92	76.73	48.80	0.00	135.44	3.03	138.47	28.29	2.79	31.08
Fine Grading Dust	0.00	0.00	0.00	0.00	135.42	0.00	135.42	28.28	0.00	28.28
Fine Grading Off Road Diesel	10.87	76.63	46.91	0.00	0.00	3.02	3.02	0.00	2.77	2.77
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.05	0.10	1.89	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 01/01/2019-06/30/2019	3.82	24.90	22.63	0.00	0.01	1.11	1.13	0.00	1.02	1.03
Trenching Off Road Diesel	3.79	24.84	21.42	0.00	0.00	1.11	1.11	0.00	1.02	1.02
Trenching Worker Trips	0.03	0.06	1.21	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 4/1/2019-6/28/2019 Active Days: 65	40.00	60.15	108.27	0.15	0.67	3.06	3.73	0.24	2.78	3.02
Building 01/01/2019-01/31/2020	6.21	35.20	84.90	0.15	0.65	1.94	2.59	0.23	1.75	1.98
Building Off Road Diesel	4.27	27.03	28.77	0.00	0.00	1.34	1.34	0.00	1.24	1.24
Building Vendor Trips	0.60	5.53	6.18	0.03	0.11	0.22	0.33	0.04	0.20	0.24
Building Worker Trips	1.34	2.65	49.95	0.12	0.54	0.37	0.92	0.20	0.31	0.51
Coating 01/01/2019-01/31/2020	29.96	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Architectural Coating	29.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Trenching 01/01/2019-06/30/2019	3.82	24.90	22.63	0.00	0.01	1.11	1.13	0.00	1.02	1.03
Trenching Off Road Diesel	3.79	24.84	21.42	0.00	0.00	1.11	1.11	0.00	1.02	1.02
Trenching Worker Trips	0.03	0.06	1.21	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 7/1/2019-12/31/2019 Active Days: 132	36.18	35.24	85.64	0.15	0.66	1.94	2.60	0.24	1.76	1.99
Building 01/01/2019-01/31/2020	6.21	35.20	84.90	0.15	0.65	1.94	2.59	0.23	1.75	1.98
Building Off Road Diesel	4.27	27.03	28.77	0.00	0.00	1.34	1.34	0.00	1.24	1.24
Building Vendor Trips	0.60	5.53	6.18	0.03	0.11	0.22	0.33	0.04	0.20	0.24
Building Worker Trips	1.34	2.65	49.95	0.12	0.54	0.37	0.92	0.20	0.31	0.51
Coating 01/01/2019-01/31/2020	29.96	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Architectural Coating	29.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.74	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Time Slice 1/1/2020-1/31/2020 Active Days: 23	35.68	31.67	81.31	0.15	0.66	1.72	2.38	0.24	1.55	1.79
Building 01/01/2019-01/31/2020	5.72	31.64	80.62	0.15	0.65	1.72	2.37	0.23	1.55	1.78
Building Off Road Diesel	3.95	24.21	28.66	0.00	0.00	1.14	1.14	0.00	1.05	1.05
Building Vendor Trips	0.56	5.01	5.79	0.03	0.11	0.20	0.31	0.04	0.18	0.22
Building Worker Trips	1.21	2.42	46.18	0.12	0.54	0.37	0.92	0.20	0.31	0.51
Coating 01/01/2019-01/31/2020	29.96	0.04	0.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Architectural Coating	29.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.04	0.69	0.00	0.01	0.01	0.01	0.00	0.00	0.01

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 1/1/2019 - 3/31/2019 - Phase 3 Grading

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

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PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\UcJobs_05600-06000\05900\05924\Urbemis\5924 Construction Village D.urb924

Project Name: Hacienda at Fairview Construction Village D

Project Location: San Bernadino County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
2023 TOTALS (lbs/day unmitigated)	59.90	136.26	154.14	0.21	400.88	6.27	407.15	83.85	5.73	89.58
2023 TOTALS (lbs/day mitigated)	59.90	136.26	154.14	0.21	136.31	6.27	142.57	28.60	5.73	34.32
2024 TOTALS (lbs/day unmitigated)	41.18	30.21	73.47	0.18	0.79	1.77	2.56	0.28	1.59	1.87
2024 TOTALS (lbs/day mitigated)	41.18	30.21	73.47	0.18	0.79	1.77	2.56	0.28	1.59	1.87

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 1/2/2023-2/17/2023 Active Days: 35	**59.90**	**136.26**	**154.14**	**0.21**	**400.88**	**6.27**	**407.15**	**83.85**	**5.73**	**89.58**
Asphalt 01/01/2023-02/18/2023	4.92	13.96	11.84	0.02	0.06	0.89	0.95	0.02	0.82	0.84
Paving Off-Gas	2.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.89	11.57	10.40	0.00	0.00	0.81	0.81	0.00	0.75	0.75
Paving On Road Diesel	0.26	2.37	1.00	0.02	0.05	0.07	0.13	0.02	0.07	0.08
Paving Worker Trips	0.01	0.02	0.44	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Building 01/01/2023-01/31/2024	5.36	30.18	72.89	0.18	0.78	1.76	2.54	0.28	1.58	1.86
Building Off Road Diesel	3.95	24.21	28.66	0.00	0.00	1.14	1.14	0.00	1.05	1.05
Building Vendor Trips	0.50	4.03	5.32	0.03	0.13	0.17	0.30	0.04	0.16	0.20
Building Worker Trips	0.91	1.94	38.91	0.14	0.65	0.44	1.09	0.23	0.37	0.61
Coating 01/01/2023-01/31/2024	35.82	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Architectural Coating	35.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Fine Grading 01/01/2023-03/31/2023	10.25	69.75	46.83	0.00	400.02	2.67	402.69	83.54	2.46	86.00
Fine Grading Dust	0.00	0.00	0.00	0.00	400.00	0.00	400.00	83.54	0.00	83.54
Fine Grading Off Road Diesel	10.22	69.69	45.60	0.00	0.00	2.66	2.66	0.00	2.45	2.45
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.03	0.06	1.23	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 01/01/2023-06/30/2023	3.54	22.34	22.00	0.00	0.01	0.94	0.95	0.00	0.86	0.87
Trenching Off Road Diesel	3.53	22.30	21.21	0.00	0.00	0.93	0.93	0.00	0.86	0.86
Trenching Worker Trips	0.02	0.04	0.79	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 2/20/2023-3/31/2023 Active Days: 30	54.97	122.31	142.30	0.19	400.82	5.38	406.20	83.83	4.91	88.74
Building 01/01/2023-01/31/2024	5.36	30.18	72.89	0.18	0.78	1.76	2.54	0.28	1.58	1.86
Building Off Road Diesel	3.95	24.21	28.66	0.00	0.00	1.14	1.14	0.00	1.05	1.05
Building Vendor Trips	0.50	4.03	5.32	0.03	0.13	0.17	0.30	0.04	0.16	0.20
Building Worker Trips	0.91	1.94	38.91	0.14	0.65	0.44	1.09	0.23	0.37	0.61
Coating 01/01/2023-01/31/2024	35.82	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Architectural Coating	35.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Fine Grading 01/01/2023-03/31/2023	10.25	69.75	46.83	0.00	400.02	2.67	402.69	83.54	2.46	86.00

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Fine Grading Dust	0.00	0.00	0.00	0.00	400.00	0.00	400.00	83.54	0.00	83.54
Fine Grading Off Road Diesel	10.22	69.69	45.60	0.00	0.00	2.66	2.66	0.00	2.45	2.45
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.03	0.06	1.23	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 01/01/2023-06/30/2023	3.54	22.34	22.00	0.00	0.01	0.94	0.95	0.00	0.86	0.87
Trenching Off Road Diesel	3.53	22.30	21.21	0.00	0.00	0.93	0.93	0.00	0.86	0.86
Trenching Worker Trips	0.02	0.04	0.79	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 4/3/2023-6/30/2023 Active Days: 65	44.72	52.56	95.47	0.18	0.80	2.71	3.51	0.29	2.45	2.74
Building 01/01/2023-01/31/2024	5.36	30.18	72.89	0.18	0.78	1.76	2.54	0.28	1.58	1.86
Building Off Road Diesel	3.95	24.21	28.66	0.00	0.00	1.14	1.14	0.00	1.05	1.05
Building Vendor Trips	0.50	4.03	5.32	0.03	0.13	0.17	0.30	0.04	0.16	0.20
Building Worker Trips	0.91	1.94	38.91	0.14	0.65	0.44	1.09	0.23	0.37	0.61
Coating 01/01/2023-01/31/2024	35.82	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Architectural Coating	35.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Trenching 01/01/2023-06/30/2023	3.54	22.34	22.00	0.00	0.01	0.94	0.95	0.00	0.86	0.87
Trenching Off Road Diesel	3.53	22.30	21.21	0.00	0.00	0.93	0.93	0.00	0.86	0.86
Trenching Worker Trips	0.02	0.04	0.79	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 7/3/2023-12/29/2023 Active Days: 130	41.18	30.21	73.47	0.18	0.79	1.77	2.56	0.28	1.59	1.87
Building 01/01/2023-01/31/2024	5.36	30.18	72.89	0.18	0.78	1.76	2.54	0.28	1.58	1.86
Building Off Road Diesel	3.95	24.21	28.66	0.00	0.00	1.14	1.14	0.00	1.05	1.05
Building Vendor Trips	0.50	4.03	5.32	0.03	0.13	0.17	0.30	0.04	0.16	0.20
Building Worker Trips	0.91	1.94	38.91	0.14	0.65	0.44	1.09	0.23	0.37	0.61
Coating 01/01/2023-01/31/2024	35.82	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Architectural Coating	35.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 1/1/2024-1/31/2024 Active Days: 23	41.18	30.21	73.47	0.18	0.79	1.77	2.56	0.28	1.59	1.87
Building 01/01/2023-01/31/2024	5.36	30.18	72.89	0.18	0.78	1.76	2.54	0.28	1.58	1.86
Building Off Road Diesel	3.95	24.21	28.66	0.00	0.00	1.14	1.14	0.00	1.05	1.05
Building Vendor Trips	0.50	4.03	5.32	0.03	0.13	0.17	0.30	0.04	0.16	0.20
Building Worker Trips	0.91	1.94	38.91	0.14	0.65	0.44	1.09	0.23	0.37	0.61
Coating 01/01/2023-01/31/2024	35.82	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Architectural Coating	35.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01

Phase Assumptions

Phase: Fine Grading 1/1/2023 - 3/31/2023 - Phase 4 Grading

Total Acres Disturbed: 220

Maximum Daily Acreage Disturbed: 20

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day

2 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

2 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

5 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

4 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 1/1/2023 - 6/30/2023 - Phase 4 Underground Utility Construction

Off-Road Equipment:

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1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
1 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
3 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 1/1/2023 - 2/18/2023 - Phase 4 Paving
Acres to be Paved: 38
Off-Road Equipment:
2 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 1/1/2023 - 1/31/2024 - Phase 4 Building Construction
Off-Road Equipment:
5 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
3 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 8 hours per day
5 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
5 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Architectural Coating 1/1/2023 - 1/31/2024 - Phase 4 Architectural Coating
Rule: Residential Interior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 100
Rule: Residential Interior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 50
Rule: Residential Exterior Coatings begins 1/1/2005 ends 6/30/2008 specifies a VOC of 250
Rule: Residential Exterior Coatings begins 7/1/2008 ends 12/31/2040 specifies a VOC of 100
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:
CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 1/2/2023-2/17/2023 Active Days: 35	**59.90**	**136.26**	**154.14**	**0.21**	136.31	**6.27**	142.57	28.60	**5.73**	34.32
Asphalt 01/01/2023-02/18/2023	4.92	13.96	11.84	0.02	0.06	0.89	0.95	0.02	0.82	0.84
Paving Off-Gas	2.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	1.89	11.57	10.40	0.00	0.00	0.81	0.81	0.00	0.75	0.75
Paving On Road Diesel	0.26	2.37	1.00	0.02	0.05	0.07	0.13	0.02	0.07	0.08
Paving Worker Trips	0.01	0.02	0.44	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Building 01/01/2023-01/31/2024	5.36	30.18	72.89	0.18	0.78	1.76	2.54	0.28	1.58	1.86
Building Off Road Diesel	3.95	24.21	28.66	0.00	0.00	1.14	1.14	0.00	1.05	1.05
Building Vendor Trips	0.50	4.03	5.32	0.03	0.13	0.17	0.30	0.04	0.16	0.20
Building Worker Trips	0.91	1.94	38.91	0.14	0.65	0.44	1.09	0.23	0.37	0.61
Coating 01/01/2023-01/31/2024	35.82	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Architectural Coating	35.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Fine Grading 01/01/2023-03/31/2023	10.25	69.75	46.83	0.00	135.44	2.67	138.12	28.29	2.46	30.75
Fine Grading Dust	0.00	0.00	0.00	0.00	135.42	0.00	135.42	28.28	0.00	28.28
Fine Grading Off Road Diesel	10.22	69.69	45.60	0.00	0.00	2.66	2.66	0.00	2.45	2.45
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.03	0.06	1.23	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 01/01/2023-06/30/2023	3.54	22.34	22.00	0.00	0.01	0.94	0.95	0.00	0.86	0.87
Trenching Off Road Diesel	3.53	22.30	21.21	0.00	0.00	0.93	0.93	0.00	0.86	0.86
Trenching Worker Trips	0.02	0.04	0.79	0.00	0.01	0.01	0.02	0.00	0.01	0.01

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Time Slice 2/20/2023-3/31/2023 Active Days: 30	54.97	122.31	142.30	0.19	136.24	5.38	141.62	28.58	4.91	33.48
Building 01/01/2023-01/31/2024	5.36	30.18	72.89	0.18	0.78	1.76	2.54	0.28	1.58	1.86
Building Off Road Diesel	3.95	24.21	28.66	0.00	0.00	1.14	1.14	0.00	1.05	1.05
Building Vendor Trips	0.50	4.03	5.32	0.03	0.13	0.17	0.30	0.04	0.16	0.20
Building Worker Trips	0.91	1.94	38.91	0.14	0.65	0.44	1.09	0.23	0.37	0.61
Coating 01/01/2023-01/31/2024	35.82	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Architectural Coating	35.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Fine Grading 01/01/2023-03/31/2023	10.25	69.75	46.83	0.00	135.44	2.67	138.12	28.29	2.46	30.75
Fine Grading Dust	0.00	0.00	0.00	0.00	135.42	0.00	135.42	28.28	0.00	28.28
Fine Grading Off Road Diesel	10.22	69.69	45.60	0.00	0.00	2.66	2.66	0.00	2.45	2.45
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.03	0.06	1.23	0.00	0.02	0.01	0.03	0.01	0.01	0.02
Trenching 01/01/2023-06/30/2023	3.54	22.34	22.00	0.00	0.01	0.94	0.95	0.00	0.86	0.87
Trenching Off Road Diesel	3.53	22.30	21.21	0.00	0.00	0.93	0.93	0.00	0.86	0.86
Trenching Worker Trips	0.02	0.04	0.79	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 4/3/2023-6/30/2023 Active Days: 65	44.72	52.56	95.47	0.18	0.80	2.71	3.51	0.29	2.45	2.74
Building 01/01/2023-01/31/2024	5.36	30.18	72.89	0.18	0.78	1.76	2.54	0.28	1.58	1.86
Building Off Road Diesel	3.95	24.21	28.66	0.00	0.00	1.14	1.14	0.00	1.05	1.05
Building Vendor Trips	0.50	4.03	5.32	0.03	0.13	0.17	0.30	0.04	0.16	0.20
Building Worker Trips	0.91	1.94	38.91	0.14	0.65	0.44	1.09	0.23	0.37	0.61
Coating 01/01/2023-01/31/2024	35.82	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Architectural Coating	35.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Trenching 01/01/2023-06/30/2023	3.54	22.34	22.00	0.00	0.01	0.94	0.95	0.00	0.86	0.87
Trenching Off Road Diesel	3.53	22.30	21.21	0.00	0.00	0.93	0.93	0.00	0.86	0.86
Trenching Worker Trips	0.02	0.04	0.79	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 7/3/2023-12/29/2023 Active Days: 130	41.18	30.21	73.47	0.18	0.79	1.77	2.56	0.28	1.59	1.87
Building 01/01/2023-01/31/2024	5.36	30.18	72.89	0.18	0.78	1.76	2.54	0.28	1.58	1.86
Building Off Road Diesel	3.95	24.21	28.66	0.00	0.00	1.14	1.14	0.00	1.05	1.05
Building Vendor Trips	0.50	4.03	5.32	0.03	0.13	0.17	0.30	0.04	0.16	0.20
Building Worker Trips	0.91	1.94	38.91	0.14	0.65	0.44	1.09	0.23	0.37	0.61
Coating 01/01/2023-01/31/2024	35.82	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Architectural Coating	35.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Time Slice 1/1/2024-1/31/2024 Active Days: 23	41.18	30.21	73.47	0.18	0.79	1.77	2.56	0.28	1.59	1.87
Building 01/01/2023-01/31/2024	5.36	30.18	72.89	0.18	0.78	1.76	2.54	0.28	1.58	1.86
Building Off Road Diesel	3.95	24.21	28.66	0.00	0.00	1.14	1.14	0.00	1.05	1.05
Building Vendor Trips	0.50	4.03	5.32	0.03	0.13	0.17	0.30	0.04	0.16	0.20
Building Worker Trips	0.91	1.94	38.91	0.14	0.65	0.44	1.09	0.23	0.37	0.61
Coating 01/01/2023-01/31/2024	35.82	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01
Architectural Coating	35.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.03	0.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 1/1/2023 - 3/31/2023 - Phase 4 Grading

For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:

PM10: 5% PM25: 5%

For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:

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PM10: 61% PM25: 61%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:

PM10: 61% PM25: 61%

APPENDIX B

URBEMIS Computer Model Output - Operational Impact Analysis

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\UcJobs_05600-06000\05900\05924\Urbemis\5924 Ops Phase 1 Unmitigated.urb924

Project Name: Hacienda at Fairview Ops Phase 1 Unmitigated

Project Location: San Bernadino County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	111.45	37.78	95.32	0.00	0.28	0.28

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	86.46	106.17	904.35	1.81	289.24	56.69

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	197.91	143.95	999.67	1.81	289.52	56.97

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	2.84	36.88	16.25	0.00	0.07	0.07
Hearth - No Summer Emissions						
Landscape	13.98	0.90	79.07	0.00	0.21	0.21
Consumer Products	87.31					
Architectural Coatings	7.32					
TOTALS (lbs/day, unmitigated)	111.45	37.78	95.32	0.00	0.28	0.28

Area Source Changes to Defaults

Percent residential using natural gas changed from 78% to 100%

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with wood fireplaces changed from 5% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	6.46	7.91	69.17	0.14	21.60	4.24
Retirement community	35.17	37.39	326.97	0.64	102.12	20.04

Shopping Center	44.83	60.87	508.21	1.03	165.52	32.41
TOTALS (lbs/day, unmitigated)	86.46	106.17	904.35	1.81	289.24	56.69

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2020 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	43.00	9.57	dwelling units	129.00	1,234.53	12,472.21
Retirement community	314.60	3.71	dwelling units	1,573.00	5,835.83	58,958.22
Shopping Center		53.28	1000 sq ft	200.00	10,656.00	95,616.28
					17,726.36	167,046.71

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	45.4	0.0	100.0	0.0
Light Truck < 3750 lbs	9.9	0.0	98.0	2.0
Light Truck 3751-5750 lbs	21.3	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.2	0.0	77.3	22.7
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	1.8	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.4	38.6	61.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.4	0.0	92.9	7.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			

% of Trips - Commercial (by land use)

Shopping Center	2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: U:\UcJobs_05600-06000\05900\05924\Urbemis\5924 Ops Phase 1 Unmitigated.urb924

Project Name: Hacienda at Fairview Ops Phase 1 Unmitigated

Project Location: San Bernadino County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	98.30	51.00	22.26	0.09	1.21	1.20

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	92.46	126.32	867.55	1.54	289.24	56.69

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	190.76	177.32	889.81	1.63	290.45	57.89

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	2.84	36.88	16.25	0.00	0.07	0.07
Hearth	0.83	14.12	6.01	0.09	1.14	1.13
Landscaping - No Winter Emissions						
Consumer Products	87.31					
Architectural Coatings	7.32					
TOTALS (lbs/day, unmitigated)	98.30	51.00	22.26	0.09	1.21	1.20

Area Source Changes to Defaults

Percent residential using natural gas changed from 78% to 100%

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with wood fireplaces changed from 5% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	6.94	9.42	66.08	0.12	21.60	4.24
Retirement community	35.05	44.51	312.36	0.55	102.12	20.04

Shopping Center	50.47	72.39	489.11	0.87	165.52	32.41
TOTALS (lbs/day, unmitigated)	92.46	126.32	867.55	1.54	289.24	56.69

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2020 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	43.00	9.57	dwelling units	129.00	1,234.53	12,472.21
Retirement community	314.60	3.71	dwelling units	1,573.00	5,835.83	58,958.22
Shopping Center		53.28	1000 sq ft	200.00	10,656.00	95,616.28
					17,726.36	167,046.71

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	45.4	0.0	100.0	0.0
Light Truck < 3750 lbs	9.9	0.0	98.0	2.0
Light Truck 3751-5750 lbs	21.3	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.2	0.0	77.3	22.7
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	1.8	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.4	38.6	61.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.4	0.0	92.9	7.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Shopping Center				2.0	1.0	97.0

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\UcJobs_05600-06000\05900\05924\Urbemis\Phase 2\5924 Ops Phase 2 Unmitigated.urb924

Project Name: Hacienda at Fairview Ops Phase 2 Unmitigated

Project Location: San Bernadino County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	202.66	67.98	170.89	0.01	0.51	0.51

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	93.73	91.58	874.74	2.54	397.75	77.50

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	296.39	159.56	1,045.63	2.55	398.26	78.01

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	5.12	66.37	28.79	0.00	0.13	0.13
Hearth - No Summer Emissions						
Landscape	25.37	1.61	142.10	0.01	0.38	0.38
Consumer Products	159.75					
Architectural Coatings	12.42					
TOTALS (lbs/day, unmitigated)	202.66	67.98	170.89	0.01	0.51	0.51

Area Source Changes to Defaults

Percent residential using natural gas changed from 78% to 100%

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with wood fireplaces changed from 5% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	11.42	11.49	111.73	0.32	50.00	9.75
Retirement community	47.93	41.93	407.78	1.17	182.48	35.59

Shopping Center	34.38	38.16	355.23	1.05	165.27	32.16
TOTALS (lbs/day, unmitigated)	93.73	91.58	874.74	2.54	397.75	77.50

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2030 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	99.67	9.57	dwelling units	299.00	2,861.43	28,908.45
Retirement community	563.00	3.71	dwelling units	2,815.00	10,443.65	105,510.11
Shopping Center		53.28	1000 sq ft	200.00	10,656.00	95,616.28
					23,961.08	230,034.84

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	44.2	0.0	100.0	0.0
Light Truck < 3750 lbs	9.9	0.0	99.0	1.0
Light Truck 3751-5750 lbs	21.8	0.0	100.0	0.0
Med Truck 5751-8500 lbs	12.1	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.3	0.0	82.6	17.4
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.1	0.0	18.2	81.8
Heavy-Heavy Truck 33,001-60,000 lbs	2.1	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.0	32.5	67.5	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.7	0.0	88.2	11.8

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Shopping Center				2.0	1.0	97.0

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: U:\UcJobs_05600-06000\05900\05924\Urbemis\Phase 2\5924 Ops Phase 2 Unmitigated.urb924

Project Name: Hacienda at Fairview Ops Phase 2 Unmitigated

Project Location: San Bernadino County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	178.80	92.20	39.78	0.16	2.22	2.20

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	98.74	108.84	837.58	2.15	397.75	77.50

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	277.54	201.04	877.36	2.31	399.97	79.70

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	5.12	66.37	28.79	0.00	0.13	0.13
Hearth	1.51	25.83	10.99	0.16	2.09	2.07
Landscaping - No Winter Emissions						
Consumer Products	159.75					
Architectural Coatings	12.42					
TOTALS (lbs/day, unmitigated)	178.80	92.20	39.78	0.16	2.22	2.20

Area Source Changes to Defaults

Percent residential using natural gas changed from 78% to 100%

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with wood fireplaces changed from 5% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	12.25	13.66	106.73	0.27	50.00	9.75
Retirement community	47.88	49.85	389.54	0.99	182.48	35.59

Shopping Center	38.61	45.33	341.31	0.89	165.27	32.16
TOTALS (lbs/day, unmitigated)	98.74	108.84	837.58	2.15	397.75	77.50

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2030 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	99.67	9.57	dwelling units	299.00	2,861.43	28,908.45
Retirement community	563.00	3.71	dwelling units	2,815.00	10,443.65	105,510.11
Shopping Center		53.28	1000 sq ft	200.00	10,656.00	95,616.28
					23,961.08	230,034.84

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	44.2	0.0	100.0	0.0
Light Truck < 3750 lbs	9.9	0.0	99.0	1.0
Light Truck 3751-5750 lbs	21.8	0.0	100.0	0.0
Med Truck 5751-8500 lbs	12.1	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.3	0.0	82.6	17.4
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.1	0.0	18.2	81.8
Heavy-Heavy Truck 33,001-60,000 lbs	2.1	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.0	32.5	67.5	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.7	0.0	88.2	11.8

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			

% of Trips - Commercial (by land use)

Shopping Center	2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\UcJobs_05600-06000\05900\05924\Urbemis\Phase 1\5924 Ops Phase 1 Mit.urb924

Project Name: Hacienda at Fairview Ops Phase 1 Mitigated

Project Location: San Bernadino County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	111.45	37.78	95.32	0.00	0.28	0.28
TOTALS (lbs/day, mitigated)	111.03	32.25	92.88	0.00	0.27	0.27
Percent Reduction	0.38	14.64	2.56	0.00	3.57	3.57

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	66.42	78.72	669.42	1.34	214.42	42.02
TOTALS (lbs/day, mitigated)	65.27	77.15	656.03	1.32	210.14	41.17
Percent Reduction	1.73	1.99	2.00	1.49	2.00	2.02

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	177.87	116.50	764.74	1.34	214.70	42.30
TOTALS (lbs/day, mitigated)	176.30	109.40	748.91	1.32	210.41	41.44
Percent Reduction	0.88	6.09	2.07	1.49	2.00	2.03

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	2.42	31.35	13.81	0.00	0.06	0.06
Hearth - No Summer Emissions						
Landscape	13.98	0.90	79.07	0.00	0.21	0.21
Consumer Products	87.31					
Architectural Coatings	7.32					
TOTALS (lbs/day, mitigated)	111.03	32.25	92.88	0.00	0.27	0.27

Area Source Changes to Defaults

Percent residential using natural gas changed from 78% to 100%

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with wood fireplaces changed from 5% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 100%

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

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Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	4.51	5.27	46.07	0.09	14.39	2.82
Retirement community	25.94	24.91	217.78	0.43	68.02	13.34
Shopping Center	34.82	46.97	392.18	0.80	127.73	25.01
TOTALS (lbs/day, mitigated)	65.27	77.15	656.03	1.32	210.14	41.17

Operational Settings:

Does not include correction for passby trips

Includes the following double counting adjustment for internal trips:

Residential Trip % Reduction: 32.04 Nonresidential Trip % Reduction: 21.26

Analysis Year: 2020 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	43.00	6.50	dwelling units	129.00	839.05	8,476.72
Retirement community	314.60	2.52	dwelling units	1,573.00	3,966.31	40,070.87
Shopping Center		41.95	1000 sq ft	200.00	8,391.00	75,292.44
					13,196.36	123,840.03

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	45.4	0.0	100.0	0.0
Light Truck < 3750 lbs	9.9	0.0	98.0	2.0
Light Truck 3751-5750 lbs	21.3	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.2	0.0	77.3	22.7
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	1.8	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.4	38.6	61.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.4	0.0	92.9	7.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Shopping Center				2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: U:\UcJobs_05600-06000\05900\05924\Urbemis\Phase 1\5924 Ops Phase 1 Mit.urb924

Project Name: Hacienda at Fairview Ops Phase 1 Mitigated

Project Location: San Bernadino County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	98.30	51.00	22.26	0.09	1.21	1.20
TOTALS (lbs/day, mitigated)	97.88	45.47	19.82	0.09	1.20	1.19
Percent Reduction	0.43	10.84	10.96	0.00	0.83	0.83

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	69.64	93.65	642.35	1.14	214.42	42.02
TOTALS (lbs/day, mitigated)	68.34	91.77	629.50	1.11	210.14	41.17
Percent Reduction	1.87	2.01	2.00	2.63	2.00	2.02

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	167.94	144.65	664.61	1.23	215.63	43.22
TOTALS (lbs/day, mitigated)	166.22	137.24	649.32	1.20	211.34	42.36
Percent Reduction	1.02	5.12	2.30	2.44	1.99	1.99

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	2.42	31.35	13.81	0.00	0.06	0.06
Hearth	0.83	14.12	6.01	0.09	1.14	1.13
Landscaping - No Winter Emissions						
Consumer Products	87.31					
Architectural Coatings	7.32					
TOTALS (lbs/day, mitigated)	97.88	45.47	19.82	0.09	1.20	1.19

Area Source Changes to Defaults

Percent residential using natural gas changed from 78% to 100%

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with wood fireplaces changed from 5% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 100%

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

6/30/2008 10:47:37 AM

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	4.72	6.27	44.01	0.08	14.39	2.82
Retirement community	24.57	29.64	208.05	0.36	68.02	13.34
Shopping Center	39.05	55.86	377.44	0.67	127.73	25.01
TOTALS (lbs/day, mitigated)	68.34	91.77	629.50	1.11	210.14	41.17

Operational Settings:

Does not include correction for passby trips

Includes the following double counting adjustment for internal trips:

Residential Trip % Reduction: 32.04 Nonresidential Trip % Reduction: 21.26

Analysis Year: 2020 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	43.00	6.50	dwelling units	129.00	839.05	8,476.72
Retirement community	314.60	2.52	dwelling units	1,573.00	3,966.31	40,070.87
Shopping Center		41.95	1000 sq ft	200.00	8,391.00	75,292.44
					13,196.36	123,840.03

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	45.4	0.0	100.0	0.0
Light Truck < 3750 lbs	9.9	0.0	98.0	2.0
Light Truck 3751-5750 lbs	21.3	0.0	100.0	0.0
Med Truck 5751-8500 lbs	11.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.2	0.0	77.3	22.7
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	1.8	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.4	38.6	61.4	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.4	0.0	92.9	7.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Shopping Center				2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\UcJobs_05600-06000\05900\05924\Urbemis\Phase 2\5924 Ops Phase 2 Mit.urb924

Project Name: Hacienda at Fairview Ops Phase 2 Mitigated

Project Location: San Bernadino County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	202.66	67.98	170.89	0.01	0.51	0.51
TOTALS (lbs/day, mitigated)	201.89	58.02	166.57	0.01	0.49	0.49
Percent Reduction	0.38	14.65	2.53	0.00	3.92	3.92

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	78.40	74.37	710.79	2.07	323.04	62.95
TOTALS (lbs/day, mitigated)	77.08	72.88	696.58	2.02	316.58	61.69
Percent Reduction	1.68	2.00	2.00	2.42	2.00	2.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	281.06	142.35	881.68	2.08	323.55	63.46
TOTALS (lbs/day, mitigated)	278.97	130.90	863.15	2.03	317.07	62.18
Percent Reduction	0.74	8.04	2.10	2.40	2.00	2.02

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	4.35	56.41	24.47	0.00	0.11	0.11
Hearth - No Summer Emissions						
Landscape	25.37	1.61	142.10	0.01	0.38	0.38
Consumer Products	159.75					
Architectural Coatings	12.42					
TOTALS (lbs/day, mitigated)	201.89	58.02	166.57	0.01	0.49	0.49

Area Source Changes to Defaults

Percent residential using natural gas changed from 78% to 100%

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with wood fireplaces changed from 5% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 100%

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

6/30/2008 10:50:59 AM

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	9.49	9.34	90.85	0.26	40.66	7.93
Retirement community	40.89	34.10	331.60	0.95	148.38	28.94
Shopping Center	26.70	29.44	274.13	0.81	127.54	24.82
TOTALS (lbs/day, mitigated)	77.08	72.88	696.58	2.02	316.58	61.69

Operational Settings:

Does not include correction for passby trips

Includes the following double counting adjustment for internal trips:

Residential Trip % Reduction: 17.02 Nonresidential Trip % Reduction: 21.26

Analysis Year: 2030 Temperature (F): 80 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	99.67	7.94	dwelling units	299.00	2,374.31	23,987.20
Retirement community	563.00	3.08	dwelling units	2,815.00	8,665.77	87,548.52
Shopping Center		41.95	1000 sq ft	200.00	8,391.00	75,292.44
					19,431.08	186,828.16

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	44.2	0.0	100.0	0.0
Light Truck < 3750 lbs	9.9	0.0	99.0	1.0
Light Truck 3751-5750 lbs	21.8	0.0	100.0	0.0
Med Truck 5751-8500 lbs	12.1	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.3	0.0	82.6	17.4
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.1	0.0	18.2	81.8
Heavy-Heavy Truck 33,001-60,000 lbs	2.1	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.0	32.5	67.5	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.7	0.0	88.2	11.8

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Shopping Center				2.0	1.0	97.0

6/30/2008 10:51:19 AM

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: U:\UcJobs_05600-06000\05900\05924\Urbemis\Phase 2\5924 Ops Phase 2 Mit.urb924

Project Name: Hacienda at Fairview Ops Phase 2 Mitigated

Project Location: San Bernadino County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	178.80	92.20	39.78	0.16	2.22	2.20
TOTALS (lbs/day, mitigated)	178.03	82.24	35.46	0.16	2.20	2.18
Percent Reduction	0.43	10.80	10.86	0.00	0.90	0.91

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	81.34	88.39	680.55	1.76	323.04	62.95
TOTALS (lbs/day, mitigated)	79.84	86.63	666.93	1.72	316.58	61.69
Percent Reduction	1.84	1.99	2.00	2.27	2.00	2.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5
TOTALS (lbs/day, unmitigated)	260.14	180.59	720.33	1.92	325.26	65.15
TOTALS (lbs/day, mitigated)	257.87	168.87	702.39	1.88	318.78	63.87
Percent Reduction	0.87	6.49	2.49	2.08	1.99	1.96

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5
Natural Gas	4.35	56.41	24.47	0.00	0.11	0.11
Hearth	1.51	25.83	10.99	0.16	2.09	2.07
Landscaping - No Winter Emissions						
Consumer Products	159.75					
Architectural Coatings	12.42					
TOTALS (lbs/day, mitigated)	178.03	82.24	35.46	0.16	2.20	2.18

Area Source Changes to Defaults

Percent residential using natural gas changed from 78% to 100%

Percentage of residences with wood stoves changed from 10% to 0%

Percentage of residences with wood fireplaces changed from 5% to 0%

Percentage of residences with natural gas fireplaces changed from 85% to 100%

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

6/30/2008 10:51:19 AM

Source	ROG	NOX	CO	SO2	PM10	PM25
Single family housing	10.07	11.11	86.79	0.22	40.66	7.93
Retirement community	39.89	40.54	316.76	0.81	148.38	28.94
Shopping Center	29.88	34.98	263.38	0.69	127.54	24.82
TOTALS (lbs/day, mitigated)	79.84	86.63	666.93	1.72	316.58	61.69

Operational Settings:

Does not include correction for passby trips

Includes the following double counting adjustment for internal trips:

Residential Trip % Reduction: 17.02 Nonresidential Trip % Reduction: 21.26

Analysis Year: 2030 Temperature (F): 60 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	99.67	7.94	dwelling units	299.00	2,374.31	23,987.20
Retirement community	563.00	3.08	dwelling units	2,815.00	8,665.77	87,548.52
Shopping Center		41.95	1000 sq ft	200.00	8,391.00	75,292.44
					19,431.08	186,828.16

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	44.2	0.0	100.0	0.0
Light Truck < 3750 lbs	9.9	0.0	99.0	1.0
Light Truck 3751-5750 lbs	21.8	0.0	100.0	0.0
Med Truck 5751-8500 lbs	12.1	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.3	0.0	82.6	17.4
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	57.1	42.9
Med-Heavy Truck 14,001-33,000 lbs	1.1	0.0	18.2	81.8
Heavy-Heavy Truck 33,001-60,000 lbs	2.1	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	4.0	32.5	67.5	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.7	0.0	88.2	11.8

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Shopping Center				2.0	1.0	97.0

APPENDIX C

List of Zero-Voc Architectural Coating Manufacturers

Super-Compliant Architectural Coating Manufacturers*

The following companies have informed the SCAQMD that they manufacture one or more Super-Compliant Architectural/Industrial (AIM) Coatings

ARCHITECTURAL COATINGS

Manufacturer	Type of Coatings	Interior	Exterior	Phone Number
Alistagen Corporation http://www.caliwel.com	PSU, F	YES	NO	866-280-0001 305-936-8691
American Formulators Mfg http://www.safecoatpaint.com	F, NFE, NFSG	YES	NO	619-239-0321
Anchor Paint http://www.anchorpaint.com	WPC/MS	NO	YES	918-836-4626
Benjamin Moore & Co http://www.benjaminmoore.com	PSU, F, NFS, NFE, NFSG	YES	NO	201-573-9600
Cloverdale Paint Inc http://www.cloverdalepaint.com	PSU, NF, IM	YES	YES	604 596 6261
Coronado Paint Co http://www.coronadopaint.com	F, NF, PSU	YES	NO	386-428-6461 x115
Diamond Vogel http://www.diamondvogel.com	F, NF, P	YES	NO	800-728-6435
Dunn Edwards http://www.dunneedwards.com	F, NF	YES	NO	888-337-2468
E-3 Coatings, Inc http://www.envirolast.com	S	NO	YES	530-308-2189
Frazee Industries http://www.frazeepaint.com	PSU, F, NFS, NFE, NFSG	YES	NO	858-626-3490
Fuhr International, LLC http://www.fuhrinternational.com	PSU, F, NF	YES	YES	800-558-7437 816-809-4403
ICI Paints http://www.iciduluxpaints.com Pro painters http://www.devoecoatings.com IM coatings http://www.duspec.com MSDS & PDS http://www.glidden.com Retail for homeowners http://www.ici.com Corporate	PSU, F, NFS, NFE, NFSG**	YES	YES	440-826-5519
Kryton http://www.kryton.com	WPS	YES	YES	
Miller Paint http://www.millerpaint.com	PSU, F, NFE, NFS	YES	NO	503-407-2532
Monopole Inc. http://www.monopoleinc.com	IM, WPS, WPC/MS	YES	YES	818-500-8585
Polibrid Coatings http://www.polibrid.com	F, NF, PSU	YES	YES	956-831-7818
Richards Paints http://www.richardspaint.com/	F, NFR, NFS	YES	NO	800-432-0983
Rodda Paints http://www.roddapaint.com/	PSU, F, NFE, NFS	YES	NO	503-737-6031 x6051
Sampson Coatings, Inc. http://www.sampsoncoatings.com	PSU, F, NF	YES	YES	804-359-5011
Samuel Cabot, Inc http://www.cabotstain.com	WPS	NO	YES	800-877-8246
Seal-Krete Inc. http://www.seal-krete.com	PSU, F	YES	YES	800-323-7357 x541
Sierra Performance by Rust-Oleum http://www.rustoleum.com	PSU, F, NF	YES	YES	800-553-8444
Silvertown Products http://www.rhinoguard.com	S, CWF	NO	YES	909-986-7061
Spectra-Tone Paint http://www.spectra-tone.com/	F, NFE, NFSG	YES	NO	800-272-4687
Tried & True Wood Finishes http://www.triedandtruewoodfinish.com	CWF	YES	NO	607-387-9280
VOC Free No Website	FLOOR SEALER, PSU, F, NF	YES	YES	201-457-1221

Super-Compliant Architectural Coating Manufacturers*

The following companies have informed the SCAQMD that they manufacture one or more Super-Compliant Architectural/Industrial (AIM) Coatings

INDUSTRIAL MAINTENANCE COATINGS

Industrial Maintenance Coatings				
Manufacturer	**Type of Coatings**	**Interior**	**Exterior**	**Phone Number**
Ameron, Intl. http://www.ameroncoatings.com/welcome.cfm	VARIOUS SYSTEMS	YES	YES	800-926-3766
Duromar http://www.duromar.com/	VARIOUS SYSTEMS	YES	YES	781-749-6992
JFB Hart Polymers http://www.jfbhartcoatings.com/	VARIOUS SYSTEMS	YES	YES	630-574-1729
Novocoat (Formerly) Superior Environmental Products, Inc http://www.novocoat.com	VARIOUS SYSTEMS	YES	YES	972-490-0566
Pacific Polymer http://www.pacpoly.com/	VARIOUS SYSTEMS	YES	YES	800-888-8340
Specialty Products Inc. http://www.specialty-products.com	VARIOUS SYSTEMS	YES	YES	253- 983-7530
United Coatings http://www.unitedcoatings.com/	VARIOUS SYSTEMS	YES	YES	800-541-4383

CWF	Clear Wood Finish
F	Flats
NF	Nonflat
NFS	Nonflat - satin
NFE	Nonflat - eggshell
NFSG	Nonflat - semi-gloss
PSU	Primers, sealers, and undercoaters
S	Stains
WPS	Waterproofing Sealer
WPCMS	Waterproofing Concrete/Masonry Sealers

** Super-compliant coatings are defined as those coatings that have a VOC content less than the VOC content limits set forth for the current and/or future limits in the Table of Standards found in paragraph (c)(2)of Rule 1113 and specify a VOC content less than 10 g/l VOC.*

** Not available for exterior use

This is not an all-inclusive list of super-compliant coatings available from manufacturers/suppliers who have informed SCAQMD that they can provide the super-compliant products listed.

The SCAQMD in no way endorses any of these companies nor does it certify their ability to meet the requirements of Rule 1113 Architectural Coatings. If you want your company included in this page, please send your request to dhopps@aqmd.gov or call Don Hopps at (909) 396-2334.

Super-Compliant_AIM.pdf
Last Update: 07/27/05

APPENDIX D

Greenhouse Gas Calculations

GRADING ACTIVITY

2010 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Scrapers	Composite	262.50	0.03	0.01
Dozers	Composite	239.10	0.03	0.01
Graders	Composite	132.74	0.02	0.00
Excavators	Composite	119.58	0.01	0.00
Off Hwy (Water) Trucks	Composite	260.10	0.02	0.01

Grading Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Scrapers	5	8.0	10,500.03	1.21	0.27
Dozers	2	8.0	3,825.62	0.49	0.10
Graders	2	8.0	2,123.89	0.25	0.06
Excavators	1	8.0	956.65	0.11	0.02
Off Hwy (Water) Trucks	4	8.0	8,323.34	0.72	0.22
		Subtotal:	**25,729.53**	**2.77**	**0.67**

	CO_2	CH_4	N_2O
Total:	**25,729.53**	**2.77**	**0.67**

EMISSIONS FROM GRADING WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	17.5
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	1050

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.095682348	2.732221988
N2O*	4.4741E-05	0.001005037
CH4	8.14608E-05	0.000125765

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**2,009.65**	**0.55**	**0.11**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2010. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

UNDERGROUND UTILITY CONSTRUCTION

2010 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Excavators	Composite	119.58	0.01	0.00
Tractors/Loaders/Backhoes	Composite	66.81	0.01	0.00
Off-Hwy (Water) Trucks	Composite	260.10	0.02	0.01
Scrapers	Composite	262.50	0.03	0.01
Graders	Composite	132.74	0.02	0.00

Underground Utility Construction Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Excavators	1	8.0	956.65	0.11	0.02
Tractors/Loaders/Backhoes	3	8.0	1,603.32	0.22	0.04
Off-Hwy (Water) Trucks	3	8.0	6,242.50	0.54	0.16
Scrapers	1	8.0	2,099.99	0.23	0.05
Graders	1	8.0	1,061.94	0.12	0.03
		Subtotal:	**11,964.41**	**1.22**	**0.31**

	CO_2	CH_4	N_2O
Total:	**11,964.41**	**1.22**	**0.31**

EMISSIONS FROM UNDERGROUND UTILITY CONSTRUCTION WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	11.25
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	675

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.095682348	2.732221988
N2O*	4.4741E-05	0.001005037
CH4	8.14608E-05	0.000125765

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**1,291.92**	**0.35**	**0.07**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2010. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

PAVING

2010 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Pavers	Composite	77.94	0.02	0.00
Rollers	Composite	67.05	0.01	0.00
Off-Hwy (Water) Trucks	Composite	260.10	0.02	0.01

Paving Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Pavers	2	8.0	1,246.96	0.26	0.03
Rollers	2	8.0	1,072.84	0.17	0.03
Off-Hwy (Water) Trucks	1	8.0	2,080.83	0.18	0.05
		Subtotal:	**4,400.64**	**0.60**	**0.11**

	CO_2	CH_4	N_2O
Total:	**4,400.64**	**0.60**	**0.11**

EMISSIONS FROM PAVING WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	6.25
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	375

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.095682348	2.732221988
N2O*	4.4741E-05	0.001005037
CH4	8.14608E-05	0.000125765

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**717.73**	**0.20**	**0.04**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2010. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

BUILDING CONSTRUCTION

2010 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Forklifts	Composite	54.40	0.01	0.00
Tractors/Loaders/Backhoes	Composite	66.81	0.01	0.00
Off-Hwy (Water) Trucks	Composite	260.10	0.02	0.01
Sweepers/Scrubbers	Composite	78.54	0.01	0.00

Building Construction Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Forklifts	5	8.0	2,175.83	0.25	0.06
Tractors/Loaders/Backhoes	5	8.0	2,672.20	0.37	0.07
Off-Hwy (Water) Trucks	5	8.0	10,404.17	0.89	0.27
Sweepers/Scrubbers	3	8.0	1,885.04	0.33	0.05
		Subtotal:	**17,137.24**	**1.84**	**0.45**

	CO_2	CH_4	N_2O
Total:	**17,137.24**	**1.84**	**0.45**

EMISSIONS FROM BUILDING CONSTRUCTION WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	22.5
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	1350

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.095682348	2.732221988
N2O*	4.4741E-05	0.001005037
CH4	8.14608E-05	0.000125765

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**2,583.84**	**0.71**	**0.14**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2010. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

EMISSIONS FROM ARCHITECTURAL COATING WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	15
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	900

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.095682348	2.732221988
N2O*	4.4741E-05	0.001005037
CH4	8.14608E-05	0.000125765

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**1,722.56**	**0.47**	**0.09**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2010. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

SCAB Fleet Average Emission Factors (Diesel)

2010

Air Basin	SC

Equipment	MaxHP	(lb/hr) CO2	(lb/hr) CH4	(lb/hr) N2O
Aerial Lifts	15	8.7	0.0009	0.0002
	25	11.0	0.0019	0.0003
	50	19.6	0.0068	0.0005
	120	38.1	0.0063	0.0010
	500	212.9	0.0136	0.0055
	750	384.8	0.0253	0.0100
Aerial Lifts Composite		34.7	0.0060	0.0009
Air Compressors	15	7.2	0.0013	0.0002
	25	14.4	0.0029	0.0004
	50	22.3	0.0105	0.0006
	120	47.0	0.0091	0.0012
	175	88.5	0.0115	0.0023
	250	131.2	0.0110	0.0034
	500	231.7	0.0175	0.0060
	750	358.1	0.0275	0.0093
	1000	486.4	0.0469	0.0126
Air Compressors Composite		63.6	0.0101	0.0017
Bore/Drill Rigs	15	10.3	0.0011	0.0003
	25	16.0	0.0018	0.0004
	50	31.0	0.0049	0.0008
	120	77.1	0.0065	0.0020
	175	141.1	0.0084	0.0037
	250	188.1	0.0086	0.0049
	500	311.3	0.0134	0.0080
	750	615.1	0.0270	0.0159
	1000	928.3	0.0483	0.0240
Bore/Drill Rigs Composite		164.9	0.0095	0.0043
Cement and Mortar M	15	6.3	0.0007	0.0002
	25	17.6	0.0031	0.0005
Cement and Mortar Mixers Compos		7.2	0.0009	0.0002
Concrete/Industrial Sa	25	16.5	0.0018	0.0004
	50	30.2	0.0111	0.0008
	120	74.1	0.0121	0.0019
	175	160.2	0.0174	0.0042
Concrete/Industrial Saws Composite		58.5	0.0114	0.0015
Cranes	50	23.2	0.0116	0.0006
	120	50.1	0.0101	0.0013
	175	80.3	0.0109	0.0021
	250	112.2	0.0112	0.0029
	500	180.1	0.0164	0.0047
	750	303.0	0.0278	0.0079
	9999	970.6	0.0982	0.0253
Cranes Composite		128.7	0.0144	0.0033
Crawler Tractors	50	24.9	0.0130	0.0007
	120	65.8	0.0140	0.0017

	175	121.2	0.0175	0.0032
	250	166.1	0.0185	0.0043
	500	259.2	0.0263	0.0067
	750	464.7	0.0472	0.0121
	1000	658.1	0.0719	0.0172
Crawler Tractors Composite		114.0	0.0168	0.0030
Crushing/Proc. Equip	50	44.0	0.0205	0.0012
	120	83.1	0.0159	0.0022
	175	167.3	0.0213	0.0044
	250	244.5	0.0202	0.0063
	500	373.6	0.0279	0.0097
	750	588.8	0.0447	0.0153
	9999	1,307.8	0.1246	0.0340
Crushing/Proc. Equipment Composi		132.3	0.0194	0.0035
Dumpers/Tenders	25	7.6	0.0010	0.0002
Dumpers/Tenders Composite		7.6	0.0010	0.0002
Excavators	25	16.4	0.0018	0.0004
	50	25.0	0.0102	0.0007
	120	73.6	0.0126	0.0019
	175	112.2	0.0132	0.0029
	250	158.7	0.0131	0.0041
	500	233.7	0.0179	0.0061
	750	387.4	0.0299	0.0100
Excavators Composite		119.6	0.0134	0.0031
Forklifts	50	14.7	0.0060	0.0004
	120	31.2	0.0054	0.0008
	175	56.1	0.0067	0.0015
	250	77.1	0.0059	0.0020
	500	111.0	0.0078	0.0029
Forklifts Composite		54.4	0.0062	0.0014
Generator Sets	15	10.2	0.0016	0.0003
	25	17.6	0.0027	0.0005
	50	30.6	0.0101	0.0008
	120	77.9	0.0126	0.0020
	175	142.0	0.0151	0.0037
	250	212.5	0.0146	0.0055
	500	336.9	0.0208	0.0087
	750	543.8	0.0346	0.0141
	9999	1,048.6	0.0909	0.0272
Generator Sets Composite		61.0	0.0087	0.0016
Graders	50	27.5	0.0126	0.0007
	120	75.0	0.0140	0.0020
	175	123.9	0.0157	0.0032
	250	172.1	0.0159	0.0045
	500	229.5	0.0194	0.0060
	750	485.7	0.0413	0.0126
Graders Composite		132.7	0.0155	0.0035
Off-Highway Tractors	120	93.7	0.0222	0.0025
	175	130.4	0.0210	0.0034
	250	130.4	0.0170	0.0034
	750	568.1	0.0667	0.0148
	1000	814.3	0.1009	0.0213
Off-Highway Tractors Composite		151.4	0.0213	0.0040

Off-Highway Trucks	175	125.1	0.0156	0.0033
	250	166.5	0.0148	0.0043
	500	272.3	0.0225	0.0071
	750	441.7	0.0367	0.0115
	1000	624.7	0.0581	0.0162
Off-Highway Trucks Composite		260.1	0.0224	0.0067
Other Construction E	15	10.1	0.0011	0.0003
	25	13.2	0.0015	0.0003
	50	28.0	0.0093	0.0007
	120	80.9	0.0119	0.0021
	175	106.5	0.0105	0.0028
	500	254.2	0.0154	0.0066
Other Construction Equipment Com		122.8	0.0095	0.0032
Other General Industr	15	6.4	0.0006	0.0002
	25	15.3	0.0017	0.0004
	50	21.7	0.0116	0.0006
	120	62.0	0.0132	0.0016
	175	95.9	0.0137	0.0025
	250	135.6	0.0126	0.0035
	500	265.4	0.0225	0.0069
	750	437.4	0.0374	0.0114
	1000	559.6	0.0575	0.0146
Other General Industrial Equipmen		152.2	0.0166	0.0040
Other Material Handli	50	30.3	0.0160	0.0008
	120	60.7	0.0128	0.0016
	175	122.1	0.0173	0.0032
	250	145.0	0.0134	0.0038
	500	191.6	0.0161	0.0050
	9999	741.3	0.0756	0.0193
Other Material Handling Equipment		141.2	0.0160	0.0037
Pavers	25	18.7	0.0025	0.0005
	50	28.0	0.0146	0.0008
	120	69.2	0.0148	0.0018
	175	128.3	0.0185	0.0034
	250	194.4	0.0219	0.0051
	500	233.2	0.0236	0.0061
Pavers Composite		77.9	0.0160	0.0020
Paving Equipment	25	12.6	0.0014	0.0003
	50	23.9	0.0125	0.0006
	120	54.5	0.0116	0.0014
	175	101.0	0.0144	0.0026
	250	122.3	0.0136	0.0032
Paving Equipment Composite		68.9	0.0120	0.0018
Plate Compactors	15	4.3	0.0005	0.0001
Plate Compactors Composite		4.3	0.0005	0.0001
Pressure Washers	15	4.9	0.0007	0.0001
	25	7.1	0.0011	0.0002
	50	14.3	0.0037	0.0004
	120	24.1	0.0035	0.0006
Pressure Washers Composite		9.4	0.0018	0.0002
Pumps	15	7.4	0.0013	0.0002
	25	19.5	0.0040	0.0005
	50	34.3	0.0121	0.0009

	120	77.9	0.0130	0.0020
	175	140.1	0.0154	0.0037
	250	201.4	0.0144	0.0052
	500	345.2	0.0221	0.0089
	750	570.7	0.0376	0.0148
	9999	1,354.8	0.1196	0.0352
Pumps Composite		49.6	0.0084	0.0013
Rollers	15	6.3	0.0007	0.0002
	25	13.3	0.0015	0.0003
	50	26.0	0.0114	0.0007
	120	59.0	0.0108	0.0015
	175	108.1	0.0133	0.0028
	250	153.1	0.0139	0.0040
	500	219.1	0.0179	0.0057
Rollers Composite		67.1	0.0106	0.0018
Rough Terrain Forklift	50	33.9	0.0143	0.0009
	120	62.4	0.0109	0.0016
	175	124.9	0.0148	0.0033
	250	170.8	0.0137	0.0044
	500	256.6	0.0189	0.0067
Rough Terrain Forklifts Composite		70.3	0.0115	0.0018
Rubber Tired Dozers	175	129.5	0.0216	0.0034
	250	183.5	0.0250	0.0048
	500	264.9	0.0326	0.0069
	750	398.8	0.0492	0.0104
	1000	591.9	0.0763	0.0155
Rubber Tired Dozers Composite		239.1	0.0305	0.0062
Rubber Tired Loaders	25	16.9	0.0019	0.0004
	50	31.1	0.0141	0.0008
	120	58.9	0.0109	0.0015
	175	106.3	0.0133	0.0028
	250	149.0	0.0135	0.0039
	500	237.0	0.0196	0.0062
	750	485.5	0.0404	0.0126
	1000	593.9	0.0555	0.0154
Rubber Tired Loaders Composite		108.6	0.0130	0.0028
Scrapers	120	93.9	0.0202	0.0025
	175	148.1	0.0216	0.0039
	250	209.5	0.0236	0.0054
	500	321.4	0.0329	0.0084
	750	555.3	0.0570	0.0145
Scrapers Composite		262.5	0.0289	0.0068
Signal Boards	15	6.2	0.0006	0.0002
	50	36.2	0.0135	0.0010
	120	80.2	0.0135	0.0021
	175	154.5	0.0172	0.0040
	250	255.3	0.0185	0.0066
Signal Boards Composite		16.7	0.0020	0.0004
Skid Steer Loaders	25	13.8	0.0022	0.0004
	50	25.5	0.0071	0.0007
	120	42.8	0.0055	0.0011
Skid Steer Loaders Composite		30.3	0.0062	0.0008
Surfacing Equipment	50	14.1	0.0053	0.0004

	120	63.8	0.0107	0.0017
	175	85.8	0.0097	0.0022
	250	134.9	0.0113	0.0035
	500	221.2	0.0167	0.0057
	750	347.0	0.0267	0.0090
Surfacing Equipment Composite		166.0	0.0140	0.0043
Sweepers/Scrubbers	15	11.9	0.0011	0.0003
	25	19.6	0.0022	0.0005
	50	31.6	0.0136	0.0008
	120	75.0	0.0134	0.0020
	175	139.0	0.0167	0.0036
	250	162.0	0.0121	0.0042
Sweepers/Scrubbers Composite		78.5	0.0140	0.0021
Tractors/Loaders/Bac	25	15.9	0.0019	0.0004
	50	30.3	0.0113	0.0008
	120	51.7	0.0082	0.0014
	175	101.4	0.0110	0.0026
	250	171.7	0.0128	0.0045
	500	344.9	0.0237	0.0089
	750	517.3	0.0359	0.0134
Tractors/Loaders/Backhoes Compos		66.8	0.0092	0.0017
Trenchers	15	8.5	0.0009	0.0002
	25	32.9	0.0036	0.0009
	50	32.9	0.0166	0.0009
	120	64.9	0.0136	0.0017
	175	143.9	0.0203	0.0038
	250	222.9	0.0250	0.0058
	500	311.3	0.0313	0.0081
	750	586.9	0.0594	0.0153
Trenchers Composite		58.7	0.0151	0.0015
Welders	15	6.2	0.0011	0.0002
	25	11.3	0.0023	0.0003
	50	26.0	0.0111	0.0007
	120	39.5	0.0073	0.0010
	175	98.2	0.0120	0.0026
	250	119.1	0.0095	0.0031
	500	167.6	0.0120	0.0043
Welders Composite		25.6	0.0073	0.0007

Emission factors sent by ARB on December 7, 2006 in grams per hour. EF converted by SCAQMD to pounds per hour.

GRADING ACTIVITY

2017 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Scrapers	Composite	262.49	0.02	0.01
Dozers	Composite	239.09	0.02	0.01
Graders	Composite	132.74	0.01	0.00
Excavators	Composite	119.58	0.01	0.00
Off Hwy (Water) Trucks	Composite	260.06	0.02	0.01

Grading Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Scrapers	5	8.0	10,499.55	0.81	0.27
Dozers	2	8.0	3,825.42	0.36	0.10
Graders	2	8.0	2,123.89	0.16	0.06
Excavators	1	8.0	956.64	0.07	0.02
Off Hwy (Water) Trucks	4	8.0	8,321.80	0.49	0.22
		Subtotal:	**25,727.30**	**1.89**	**0.67**

	CO_2	CH_4	N_2O
Total:	**25,727.30**	**1.89**	**0.67**

EMISSIONS FROM GRADING WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	17.5
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	1050

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.106274888	2.840050152
N2O*	2.49969E-05	0.000521428
CH4	5.30045E-05	6.66308E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**2,071.82**	**0.29**	**0.06**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2017. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

UNDERGROUND UTILITY CONSTRUCTION

2017 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Excavators	Composite	119.58	0.01	0.00
Tractors/Loaders/Backhoes	Composite	66.80	0.01	0.00
Off-Hwy (Water) Trucks	Composite	260.06	0.02	0.01
Scrapers	Composite	262.49	0.02	0.01
Graders	Composite	132.74	0.01	0.00

Underground Utility Construction Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Excavators	1	8.0	956.64	0.07	0.02
Tractors/Loaders/Backhoes	3	8.0	1,603.13	0.12	0.04
Off-Hwy (Water) Trucks	3	8.0	6,241.35	0.37	0.16
Scrapers	1	8.0	2,099.91	0.16	0.05
Graders	1	8.0	1,061.94	0.08	0.03
		Subtotal:	**11,962.98**	**0.80**	**0.31**

	CO_2	CH_4	N_2O
Total:	**11,962.98**	**0.80**	**0.31**

EMISSIONS FROM UNDERGROUND UTILITY CONSTRUCTION WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	11.25
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	675

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.106274888	2.840050152
N2O*	2.49969E-05	0.000521428
CH4	5.30045E-05	6.66308E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**1,331.88**	**0.18**	**0.04**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2017. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

PAVING

2017 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Pavers	Composite	77.93	0.01	0.00
Rollers	Composite	67.05	0.01	0.00
Off-Hwy (Water) Trucks	Composite	260.06	0.02	0.01

Paving Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Pavers	2	8.0	1,246.94	0.17	0.03
Rollers	2	8.0	1,072.74	0.11	0.03
Off-Hwy (Water) Trucks	1	8.0	2,080.45	0.12	0.05
		Subtotal:	**4,400.12**	**0.40**	**0.11**

	CO_2	CH_4	N_2O
Total:	**4,400.12**	**0.40**	**0.11**

EMISSIONS FROM PAVING WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	6.25
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	375

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.106274888	2.840050152
N2O*	2.49969E-05	0.000521428
CH4	5.30045E-05	6.66308E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**739.94**	**0.10**	**0.02**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2017. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

BUILDING CONSTRUCTION

2017 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Forklifts	Composite	54.40	0.00	0.00
Tractors/Loaders/Backhoes	Composite	66.80	0.01	0.00
Off-Hwy (Water) Trucks	Composite	260.06	0.02	0.01
Sweepers/Scrubbers	Composite	78.54	0.01	0.00

Building Construction Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Forklifts	5	8.0	2,175.83	0.14	0.06
Tractors/Loaders/Backhoes	5	8.0	2,671.89	0.20	0.07
Off-Hwy (Water) Trucks	5	8.0	10,402.26	0.62	0.27
Sweepers/Scrubbers	3	8.0	1,885.04	0.16	0.05
		Subtotal:	**17,135.01**	**1.12**	**0.44**

	CO_2	CH_4	N_2O
Total:	**17,135.01**	**1.12**	**0.44**

EMISSIONS FROM BUILDING CONSTRUCTION WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	22.5
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	1350

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.106274888	2.840050152
N2O*	2.49969E-05	0.000521428
CH4	5.30045E-05	6.66308E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**2,663.77**	**0.37**	**0.08**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2017. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

EMISSIONS FROM ARCHITECTURAL COATING WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	15
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	900

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.106274888	2.840050152
N2O*	2.49969E-05	0.000521428
CH4	5.30045E-05	6.66308E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**1,775.85**	**0.25**	**0.05**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2017. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

SCAB Fleet Average Emission Factors (Diesel)

2017

Air Basin	SC

Equipment	MaxHP	(lb/hr) CO2	(lb/hr) CH4	(lb/hr) N2O
Aerial Lifts	15	8.7	0.0009	0.0002
	25	11.0	0.0013	0.0003
	50	19.6	0.0034	0.0005
	120	38.1	0.0033	0.0010
	500	212.9	0.0080	0.0055
	750	384.8	0.0149	0.0099
Aerial Lifts Composite		34.7	0.0032	0.0009
Air Compressors	15	7.2	0.0009	0.0002
	25	14.4	0.0019	0.0004
	50	22.3	0.0053	0.0006
	120	47.0	0.0051	0.0012
	175	88.5	0.0068	0.0023
	250	131.2	0.0071	0.0034
	500	231.7	0.0119	0.0060
	750	358.1	0.0186	0.0093
	1000	486.4	0.0282	0.0126
Air Compressors Composite		63.6	0.0058	0.0017
Bore/Drill Rigs	15	10.3	0.0011	0.0003
	25	16.0	0.0017	0.0004
	50	31.0	0.0019	0.0008
	120	77.1	0.0029	0.0020
	175	141.1	0.0047	0.0037
	250	188.1	0.0052	0.0049
	500	311.3	0.0086	0.0080
	750	615.1	0.0171	0.0159
	1000	928.3	0.0272	0.0240
Bore/Drill Rigs Composite		164.9	0.0052	0.0043
Cement and Mortar M	15	6.3	0.0007	0.0002
	25	17.6	0.0021	0.0005
Cement and Mortar Mixers Compos		7.2	0.0008	0.0002
Concrete/Industrial Sa	25	16.5	0.0018	0.0004
	50	30.2	0.0056	0.0008
	120	74.1	0.0066	0.0019
	175	160.2	0.0101	0.0042
Concrete/Industrial Saws Composite		58.5	0.0061	0.0015
Cranes	50	23.2	0.0064	0.0006
	120	50.1	0.0062	0.0013
	175	80.3	0.0073	0.0021
	250	112.2	0.0075	0.0029
	500	180.1	0.0114	0.0047
	750	303.0	0.0193	0.0078
	9999	970.6	0.0706	0.0252
Cranes Composite		128.6	0.0097	0.0033
Crawler Tractors	50	24.9	0.0079	0.0007

	120	65.8	0.0091	0.0017
	175	121.2	0.0122	0.0032
	250	166.1	0.0127	0.0043
	500	259.2	0.0187	0.0067
	750	464.7	0.0336	0.0121
	1000	658.1	0.0512	0.0171
Crawler Tractors Composite		114.0	0.0114	0.0030
Crushing/Proc. Equip	50	44.0	0.0098	0.0012
	120	83.1	0.0086	0.0022
	175	167.3	0.0124	0.0044
	250	244.5	0.0132	0.0063
	500	373.6	0.0193	0.0097
	750	588.8	0.0302	0.0152
	9999	1,307.8	0.0785	0.0339
Crushing/Proc. Equipment Composi		132.3	0.0110	0.0034
Dumpers/Tenders	25	7.6	0.0008	0.0002
Dumpers/Tenders Composite		7.6	0.0008	0.0002
Excavators	25	16.4	0.0018	0.0004
	50	25.0	0.0047	0.0007
	120	73.6	0.0069	0.0019
	175	112.2	0.0081	0.0029
	250	158.7	0.0090	0.0041
	500	233.7	0.0128	0.0060
	750	387.4	0.0213	0.0100
Excavators Composite		119.6	0.0083	0.0031
Forklifts	50	14.7	0.0023	0.0004
	120	31.2	0.0026	0.0008
	175	56.1	0.0038	0.0015
	250	77.1	0.0042	0.0020
	500	111.0	0.0059	0.0029
Forklifts Composite		54.4	0.0036	0.0014
Generator Sets	15	10.2	0.0011	0.0003
	25	17.6	0.0021	0.0005
	50	30.6	0.0050	0.0008
	120	77.9	0.0065	0.0020
	175	142.0	0.0081	0.0037
	250	212.5	0.0084	0.0055
	500	336.9	0.0121	0.0087
	750	543.8	0.0201	0.0141
	9999	1,048.6	0.0507	0.0271
Generator Sets Composite		61.0	0.0048	0.0016
Graders	50	27.5	0.0067	0.0007
	120	75.0	0.0084	0.0020
	175	123.9	0.0102	0.0032
	250	172.1	0.0106	0.0045
	500	229.5	0.0135	0.0059
	750	485.7	0.0288	0.0126
Graders Composite		132.7	0.0101	0.0035
Off-Highway Tractors	120	93.7	0.0154	0.0025
	175	130.4	0.0153	0.0034
	250	130.4	0.0121	0.0034
	750	568.1	0.0490	0.0148

	1000	814.3	0.0742	0.0212
Off-Highway Tractors Composite		151.4	0.0155	0.0039
Off-Highway Trucks	175	125.1	0.0097	0.0033
	250	166.5	0.0100	0.0043
	500	272.3	0.0158	0.0070
	750	441.7	0.0258	0.0114
	1000	624.7	0.0389	0.0162
Off-Highway Trucks Composite		260.1	0.0154	0.0067
Other Construction Eq	15	10.1	0.0011	0.0003
	25	13.2	0.0014	0.0003
	50	28.0	0.0042	0.0007
	120	80.9	0.0061	0.0021
	175	106.5	0.0060	0.0028
	500	254.2	0.0107	0.0066
Other Construction Equipment Com		122.5	0.0061	0.0032
Other General Industr	15	6.4	0.0006	0.0002
	25	15.3	0.0017	0.0004
	50	21.7	0.0056	0.0006
	120	62.0	0.0073	0.0016
	175	95.9	0.0082	0.0025
	250	135.6	0.0084	0.0035
	500	265.4	0.0157	0.0069
	750	437.4	0.0261	0.0113
	1000	559.6	0.0367	0.0145
Other General Industrial Equipmen		152.2	0.0107	0.0039
Other Material Handli	50	30.3	0.0078	0.0008
	120	60.7	0.0071	0.0016
	175	122.1	0.0103	0.0032
	250	145.0	0.0089	0.0038
	500	191.6	0.0112	0.0050
	9999	741.3	0.0507	0.0192
Other Material Handling Equipment		141.2	0.0101	0.0037
Pavers	25	18.7	0.0021	0.0005
	50	28.0	0.0094	0.0007
	120	69.2	0.0099	0.0018
	175	128.3	0.0130	0.0033
	250	194.4	0.0150	0.0050
	500	233.2	0.0168	0.0061
Pavers Composite		77.9	0.0108	0.0020
Paving Equipment	25	12.6	0.0014	0.0003
	50	23.9	0.0080	0.0006
	120	54.5	0.0077	0.0014
	175	101.0	0.0101	0.0026
	250	122.3	0.0092	0.0032
Paving Equipment Composite		68.9	0.0082	0.0018
Plate Compactors	15	4.3	0.0005	0.0001
Plate Compactors Composite		4.3	0.0005	0.0001
Pressure Washers	15	4.9	0.0005	0.0001
	25	7.1	0.0009	0.0002
	50	14.3	0.0018	0.0004
	120	24.1	0.0017	0.0006
Pressure Washers Composite		9.4	0.0010	0.0002

Pumps	15	7.4	0.0009	0.0002
	25	19.5	0.0026	0.0005
	50	34.3	0.0061	0.0009
	120	77.9	0.0069	0.0020
	175	140.1	0.0085	0.0036
	250	201.4	0.0084	0.0052
	500	345.2	0.0132	0.0089
	750	570.7	0.0224	0.0148
	9999	1,354.8	0.0681	0.0351
Pumps Composite		49.6	0.0046	0.0013
Rollers	15	6.3	0.0007	0.0002
	25	13.3	0.0015	0.0003
	50	26.0	0.0066	0.0007
	120	59.0	0.0066	0.0015
	175	108.1	0.0087	0.0028
	250	153.1	0.0089	0.0040
	500	219.1	0.0119	0.0057
Rollers Composite		67.0	0.0066	0.0017
Rough Terrain Forklift	50	33.9	0.0067	0.0009
	120	62.4	0.0060	0.0016
	175	124.9	0.0090	0.0033
	250	170.8	0.0094	0.0044
	500	256.6	0.0137	0.0066
Rough Terrain Forklifts Composite		70.3	0.0064	0.0018
Rubber Tired Dozers	175	129.5	0.0159	0.0034
	250	183.5	0.0180	0.0048
	500	264.9	0.0240	0.0069
	750	398.8	0.0362	0.0104
	1000	591.9	0.0566	0.0154
Rubber Tired Dozers Composite		239.1	0.0222	0.0062
Rubber Tired Loaders	25	16.9	0.0018	0.0004
	50	31.1	0.0074	0.0008
	120	58.9	0.0064	0.0015
	175	106.3	0.0086	0.0028
	250	149.0	0.0090	0.0039
	500	237.0	0.0137	0.0061
	750	485.5	0.0282	0.0126
	1000	593.9	0.0374	0.0154
Rubber Tired Loaders Composite		108.6	0.0083	0.0028
Scrapers	120	93.9	0.0133	0.0025
	175	148.1	0.0151	0.0039
	250	209.5	0.0163	0.0054
	500	321.4	0.0234	0.0083
	750	555.3	0.0406	0.0144
Scrapers Composite		262.5	0.0204	0.0068
Signal Boards	15	6.2	0.0006	0.0002
	50	36.2	0.0067	0.0010
	120	80.2	0.0070	0.0021
	175	154.5	0.0095	0.0040
	250	255.3	0.0111	0.0066
Signal Boards Composite		16.7	0.0014	0.0004
Skid Steer Loaders	25	13.8	0.0016	0.0004

	50	25.5	0.0026	0.0007
	120	42.8	0.0024	0.0011
Skid Steer Loaders Composite		30.3	0.0025	0.0008
Surfacing Equipment	50	14.1	0.0031	0.0004
	120	63.8	0.0065	0.0017
	175	85.8	0.0062	0.0022
	250	134.9	0.0070	0.0035
	500	221.2	0.0107	0.0057
	750	347.0	0.0170	0.0090
Surfacing Equipment Composite		166.0	0.0088	0.0043
Sweepers/Scrubbers	15	11.9	0.0011	0.0003
	25	19.6	0.0021	0.0005
	50	31.6	0.0052	0.0008
	120	75.0	0.0063	0.0020
	175	139.0	0.0093	0.0036
	250	162.0	0.0084	0.0042
Sweepers/Scrubbers Composite		78.5	0.0067	0.0020
Tractors/Loaders/Bac	25	15.9	0.0017	0.0004
	50	30.3	0.0050	0.0008
	120	51.7	0.0043	0.0014
	175	101.4	0.0066	0.0026
	250	171.7	0.0087	0.0044
	500	344.9	0.0170	0.0089
	750	517.3	0.0256	0.0134
Tractors/Loaders/Backhoes Compos		66.8	0.0050	0.0017
Trenchers	15	8.5	0.0009	0.0002
	25	32.9	0.0036	0.0009
	50	32.9	0.0110	0.0009
	120	64.9	0.0092	0.0017
	175	143.9	0.0143	0.0038
	250	222.9	0.0170	0.0058
	500	311.3	0.0220	0.0081
	750	586.9	0.0416	0.0152
Trenchers Composite		58.7	0.0102	0.0015
Welders	15	6.2	0.0008	0.0002
	25	11.3	0.0015	0.0003
	50	26.0	0.0058	0.0007
	120	39.5	0.0040	0.0010
	175	98.2	0.0070	0.0026
	250	119.1	0.0059	0.0031
	500	167.6	0.0078	0.0043
Welders Composite		25.6	0.0039	0.0007

Emission factors sent by ARB on December 7, 2006 in grams per hour. EF converted by SCAQMD to pounds per hour.

GRADING ACTIVITY

2019 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Scrapers	Composite	262.49	0.02	0.01
Dozers	Composite	239.09	0.02	0.01
Graders	Composite	132.74	0.01	0.00
Excavators	Composite	119.58	0.01	0.00
Off Hwy (Water) Trucks	Composite	260.09	0.01	0.01

Grading Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Scrapers	5	8.0	10,499.45	0.73	0.27
Dozers	2	8.0	3,825.37	0.32	0.10
Graders	2	8.0	2,123.89	0.14	0.06
Excavators	1	8.0	956.64	0.06	0.02
Off Hwy (Water) Trucks	4	8.0	8,322.75	0.44	0.22
		Subtotal:	**25,728.09**	**1.69**	**0.67**

	CO_2	CH_4	N_2O
Total:	**25,728.09**	**1.69**	**0.67**

EMISSIONS FROM GRADING WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	17.5
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	1050

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.104960995	2.850601825
N2O*	2.13027E-05	0.00043867
CH4	4.74287E-05	5.61934E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**2,076.67**	**0.24**	**0.05**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2019. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

UNDERGROUND UTILITY CONSTRUCTION

2019 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Excavators	Composite	119.58	0.01	0.00
Tractors/Loaders/Backhoes	Composite	66.80	0.00	0.00
Off-Hwy (Water) Trucks	Composite	260.09	0.01	0.01
Scrapers	Composite	262.49	0.02	0.01
Graders	Composite	132.74	0.01	0.00

Underground Utility Construction Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Excavators	1	8.0	956.64	0.06	0.02
Tractors/Loaders/Backhoes	3	8.0	1,603.15	0.10	0.04
Off-Hwy (Water) Trucks	3	8.0	6,242.06	0.33	0.16
Scrapers	1	8.0	2,099.89	0.15	0.05
Graders	1	8.0	1,061.94	0.07	0.03
		Subtotal:	**11,963.68**	**0.71**	**0.31**

	CO_2	CH_4	N_2O
Total:	**11,963.68**	**0.71**	**0.31**

EMISSIONS FROM UNDERGROUND UTILITY CONSTRUCTION WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	11.25
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	675

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.104960995	2.850601825
N2O*	2.13027E-05	0.00043867
CH4	4.74287E-05	5.61934E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**1,335.00**	**0.16**	**0.03**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2019. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

PAVING

2019 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Pavers	Composite	77.93	0.01	0.00
Rollers	Composite	67.04	0.01	0.00
Off-Hwy (Water) Trucks	Composite	260.09	0.01	0.01

Paving Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Pavers	2	8.0	1,246.93	0.15	0.03
Rollers	2	8.0	1,072.67	0.09	0.03
Off-Hwy (Water) Trucks	1	8.0	2,080.69	0.11	0.05
		Subtotal:	**4,400.29**	**0.35**	**0.11**

	CO_2	CH_4	N_2O
Total:	**4,400.29**	**0.35**	**0.11**

EMISSIONS FROM PAVING WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	6.25
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	375

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.104960995	2.850601825
N2O*	2.13027E-05	0.00043867
CH4	4.74287E-05	5.61934E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**741.67**	**0.09**	**0.02**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2019. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

BUILDING CONSTRUCTION

2019 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Forklifts	Composite	54.40	0.00	0.00
Tractors/Loaders/Backhoes	Composite	66.80	0.00	0.00
Off-Hwy (Water) Trucks	Composite	260.09	0.01	0.01
Sweepers/Scrubbers	Composite	78.54	0.01	0.00

Building Construction Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Forklifts	5	8.0	2,175.83	0.12	0.06
Tractors/Loaders/Backhoes	5	8.0	2,671.92	0.17	0.07
Off-Hwy (Water) Trucks	5	8.0	10,403.44	0.55	0.27
Sweepers/Scrubbers	3	8.0	1,885.04	0.14	0.05
		Subtotal:	**17,136.22**	**0.98**	**0.44**

	CO_2	CH_4	N_2O
Total:	**17,136.22**	**0.98**	**0.44**

EMISSIONS FROM BUILDING CONSTRUCTION WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	22.5
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	1350

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.104960995	2.850601825
N2O*	2.13027E-05	0.00043867
CH4	4.74287E-05	5.61934E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**2,670.00**	**0.31**	**0.07**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2019. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

EMISSIONS FROM ARCHITECTURAL COATING WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	15
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	900

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.104960995	2.850601825
N2O*	2.13027E-05	0.00043867
CH4	4.74287E-05	5.61934E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**1,780.00**	**0.21**	**0.05**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2019. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

SCAB Fleet Average Emission Factors (Diesel)

2019

Air Basin	SC

Equipment	MaxHP	(lb/hr) CO2	(lb/hr) CH4	(lb/hr) N2O
Aerial Lifts	15	8.7	0.0009	0.0002
	25	11.0	0.0013	0.0003
	50	19.6	0.0026	0.0005
	120	38.1	0.0026	0.0010
	500	212.9	0.0072	0.0055
	750	384.8	0.0131	0.0099
Aerial Lifts Composite		34.7	0.0026	0.0009
Air Compressors	15	7.2	0.0009	0.0002
	25	14.4	0.0018	0.0004
	50	22.3	0.0041	0.0006
	120	47.0	0.0041	0.0012
	175	88.5	0.0057	0.0023
	250	131.2	0.0064	0.0034
	500	231.7	0.0109	0.0060
	750	358.1	0.0168	0.0093
	1000	486.4	0.0252	0.0126
Air Compressors Composite		63.6	0.0047	0.0017
Bore/Drill Rigs	15	10.3	0.0011	0.0003
	25	16.0	0.0017	0.0004
	50	31.0	0.0018	0.0008
	120	77.1	0.0026	0.0020
	175	141.1	0.0039	0.0037
	250	188.1	0.0045	0.0049
	500	311.3	0.0075	0.0080
	750	615.1	0.0148	0.0159
	1000	928.3	0.0234	0.0240
Bore/Drill Rigs Composite		164.9	0.0046	0.0043
Cement and Mortar M	15	6.3	0.0007	0.0002
	25	17.6	0.0021	0.0005
Cement and Mortar Mixers Compos		7.2	0.0008	0.0002
Concrete/Industrial Sa	25	16.5	0.0018	0.0004
	50	30.2	0.0043	0.0008
	120	74.1	0.0052	0.0019
	175	160.2	0.0084	0.0042
Concrete/Industrial Saws Composite		58.5	0.0048	0.0015
Cranes	50	23.2	0.0053	0.0006
	120	50.1	0.0053	0.0013
	175	80.3	0.0063	0.0021
	250	112.2	0.0067	0.0029
	500	180.1	0.0103	0.0047
	750	303.0	0.0174	0.0078
	9999	970.6	0.0636	0.0251
Cranes Composite		128.6	0.0086	0.0033
Crawler Tractors	50	24.9	0.0068	0.0007

	120	65.8	0.0080	0.0017
	175	121.2	0.0108	0.0032
	250	166.1	0.0114	0.0043
	500	259.2	0.0167	0.0067
	750	464.7	0.0302	0.0120
	1000	658.1	0.0460	0.0171
Crawler Tractors Composite		114.0	0.0101	0.0030
Crushing/Proc. Equip	50	44.0	0.0074	0.0012
	120	83.1	0.0069	0.0022
	175	167.3	0.0105	0.0044
	250	244.5	0.0118	0.0063
	500	373.6	0.0175	0.0097
	750	588.8	0.0275	0.0152
	9999	1,307.8	0.0717	0.0338
Crushing/Proc. Equipment Composi		132.3	0.0091	0.0034
Dumpers/Tenders	25	7.6	0.0008	0.0002
Dumpers/Tenders Composite		7.6	0.0008	0.0002
Excavators	25	16.4	0.0018	0.0004
	50	25.0	0.0038	0.0007
	120	73.6	0.0057	0.0019
	175	112.2	0.0068	0.0029
	250	158.7	0.0079	0.0041
	500	233.7	0.0114	0.0060
	750	387.4	0.0189	0.0100
Excavators Composite		119.6	0.0071	0.0031
Forklifts	50	14.7	0.0019	0.0004
	120	31.2	0.0022	0.0008
	175	56.1	0.0033	0.0015
	250	77.1	0.0037	0.0020
	500	111.0	0.0053	0.0029
Forklifts Composite		54.4	0.0031	0.0014
Generator Sets	15	10.2	0.0011	0.0003
	25	17.6	0.0021	0.0005
	50	30.6	0.0039	0.0008
	120	77.9	0.0051	0.0020
	175	142.0	0.0066	0.0037
	250	212.5	0.0072	0.0055
	500	336.9	0.0108	0.0087
	750	543.8	0.0176	0.0141
	9999	1,048.6	0.0438	0.0271
Generator Sets Composite		61.0	0.0039	0.0016
Graders	50	27.5	0.0056	0.0007
	120	75.0	0.0072	0.0020
	175	123.9	0.0089	0.0032
	250	172.1	0.0095	0.0045
	500	229.5	0.0122	0.0059
	750	485.7	0.0259	0.0126
Graders Composite		132.7	0.0089	0.0034
Off-Highway Tractors	120	93.7	0.0139	0.0025
	175	130.4	0.0138	0.0034
	250	130.4	0.0109	0.0034
	750	568.1	0.0444	0.0148

	1000	814.3	0.0675	0.0212
Off-Highway Tractors Composite		151.4	0.0140	0.0039
Off-Highway Trucks	175	125.1	0.0082	0.0033
	250	166.5	0.0089	0.0043
	500	272.3	0.0142	0.0070
	750	441.7	0.0230	0.0114
	1000	624.7	0.0345	0.0162
Off-Highway Trucks Composite		260.1	0.0137	0.0067
Other Construction Ec	15	10.1	0.0011	0.0003
	25	13.2	0.0014	0.0003
	50	28.0	0.0033	0.0007
	120	80.9	0.0049	0.0021
	175	106.5	0.0051	0.0028
	500	254.2	0.0096	0.0066
Other Construction Equipment Com		122.5	0.0054	0.0032
Other General Industr	15	6.4	0.0006	0.0002
	25	15.3	0.0017	0.0004
	50	21.7	0.0043	0.0006
	120	62.0	0.0059	0.0016
	175	95.9	0.0070	0.0025
	250	135.6	0.0075	0.0035
	500	265.4	0.0143	0.0069
	750	437.4	0.0236	0.0113
	1000	559.6	0.0331	0.0145
Other General Industrial Equipmen		152.2	0.0094	0.0039
Other Material Handli	50	30.3	0.0060	0.0008
	120	60.7	0.0058	0.0016
	175	122.1	0.0088	0.0032
	250	145.0	0.0080	0.0038
	500	191.6	0.0102	0.0050
	9999	741.3	0.0465	0.0192
Other Material Handling Equipment		141.2	0.0089	0.0037
Pavers	25	18.7	0.0020	0.0005
	50	28.0	0.0081	0.0007
	120	69.2	0.0087	0.0018
	175	128.3	0.0116	0.0033
	250	194.4	0.0134	0.0050
	500	233.2	0.0151	0.0060
Pavers Composite		77.9	0.0095	0.0020
Paving Equipment	25	12.6	0.0014	0.0003
	50	23.9	0.0069	0.0006
	120	54.5	0.0068	0.0014
	175	101.0	0.0090	0.0026
	250	122.3	0.0082	0.0032
Paving Equipment Composite		68.9	0.0073	0.0018
Plate Compactors	15	4.3	0.0005	0.0001
Plate Compactors Composite		4.3	0.0005	0.0001
Pressure Washers	15	4.9	0.0005	0.0001
	25	7.1	0.0008	0.0002
	50	14.3	0.0013	0.0004
	120	24.1	0.0013	0.0006
Pressure Washers Composite		9.4	0.0008	0.0002

Pumps	15	7.4	0.0009	0.0002
	25	19.5	0.0024	0.0005
	50	34.3	0.0047	0.0009
	120	77.9	0.0054	0.0020
	175	140.1	0.0070	0.0036
	250	201.4	0.0073	0.0052
	500	345.2	0.0118	0.0089
	750	570.7	0.0198	0.0147
	9999	1,354.8	0.0593	0.0350
Pumps Composite		49.6	0.0037	0.0013
Rollers	15	6.3	0.0007	0.0002
	25	13.3	0.0015	0.0003
	50	26.0	0.0054	0.0007
	120	59.0	0.0057	0.0015
	175	108.1	0.0075	0.0028
	250	153.1	0.0080	0.0040
	500	219.1	0.0109	0.0057
Rollers Composite		67.0	0.0057	0.0017
Rough Terrain Forklift	50	33.9	0.0052	0.0009
	120	62.4	0.0049	0.0016
	175	124.9	0.0076	0.0033
	250	170.8	0.0084	0.0044
	500	256.6	0.0123	0.0066
Rough Terrain Forklifts Composite		70.3	0.0052	0.0018
Rubber Tired Dozers	175	129.5	0.0144	0.0034
	250	183.5	0.0162	0.0048
	500	264.9	0.0217	0.0069
	750	398.8	0.0328	0.0104
	1000	591.9	0.0515	0.0154
Rubber Tired Dozers Composite		239.1	0.0201	0.0062
Rubber Tired Loaders	25	16.9	0.0018	0.0004
	50	31.1	0.0061	0.0008
	120	58.9	0.0055	0.0015
	175	106.3	0.0074	0.0028
	250	149.0	0.0081	0.0039
	500	237.0	0.0124	0.0061
	750	485.5	0.0254	0.0126
	1000	593.9	0.0333	0.0154
Rubber Tired Loaders Composite		108.6	0.0073	0.0028
Scrapers	120	93.9	0.0117	0.0025
	175	148.1	0.0134	0.0039
	250	209.5	0.0145	0.0054
	500	321.4	0.0210	0.0083
	750	555.3	0.0365	0.0144
Scrapers Composite		262.5	0.0182	0.0068
Signal Boards	15	6.2	0.0006	0.0002
	50	36.2	0.0051	0.0009
	120	80.2	0.0056	0.0021
	175	154.5	0.0079	0.0040
	250	255.3	0.0098	0.0066
Signal Boards Composite		16.7	0.0012	0.0004
Skid Steer Loaders	25	13.8	0.0016	0.0004

	50	25.5	0.0022	0.0007
	120	42.8	0.0021	0.0011
Skid Steer Loaders Composite		30.3	0.0021	0.0008
Surfacing Equipment	50	14.1	0.0026	0.0004
	120	63.8	0.0056	0.0017
	175	85.8	0.0053	0.0022
	250	134.9	0.0062	0.0035
	500	221.2	0.0096	0.0057
	750	347.0	0.0152	0.0090
Surfacing Equipment Composite		166.0	0.0079	0.0043
Sweepers/Scrubbers	15	11.9	0.0011	0.0003
	25	19.6	0.0021	0.0005
	50	31.6	0.0043	0.0008
	120	75.0	0.0054	0.0020
	175	139.0	0.0082	0.0036
	250	162.0	0.0077	0.0042
Sweepers/Scrubbers Composite		78.5	0.0057	0.0020
Tractors/Loaders/Bac	25	15.9	0.0017	0.0004
	50	30.3	0.0040	0.0008
	120	51.7	0.0036	0.0013
	175	101.4	0.0056	0.0026
	250	171.7	0.0078	0.0044
	500	344.9	0.0153	0.0089
	750	517.3	0.0230	0.0134
Tractors/Loaders/Backhoes Compos		66.8	0.0043	0.0017
Trenchers	15	8.5	0.0009	0.0002
	25	32.9	0.0036	0.0009
	50	32.9	0.0096	0.0009
	120	64.9	0.0081	0.0017
	175	143.9	0.0128	0.0038
	250	222.9	0.0152	0.0058
	500	311.3	0.0198	0.0081
	750	586.9	0.0376	0.0152
Trenchers Composite		58.7	0.0090	0.0015
Welders	15	6.2	0.0007	0.0002
	25	11.3	0.0014	0.0003
	50	26.0	0.0044	0.0007
	120	39.5	0.0032	0.0010
	175	98.2	0.0058	0.0026
	250	119.1	0.0053	0.0031
	500	167.6	0.0071	0.0043
Welders Composite		25.6	0.0031	0.0007

Emission factors sent by ARB on December 7, 2006 in grams per hour. EF converted by SCAQMD to pounds per hour.

GRADING ACTIVITY

2023 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Scrapers	Composite	262.48	0.01	0.01
Dozers	Composite	239.08	0.02	0.01
Graders	Composite	132.74	0.01	0.00
Excavators	Composite	119.58	0.01	0.00
Off Hwy (Water) Trucks	Composite	260.07	0.01	0.01

Grading Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Scrapers	5	8.0	10,499.32	0.59	0.27
Dozers	2	8.0	3,825.28	0.26	0.10
Graders	2	8.0	2,123.89	0.11	0.06
Excavators	1	8.0	956.63	0.04	0.02
Off Hwy (Water) Trucks	4	8.0	8,322.37	0.36	0.22
		Subtotal:	**25,727.49**	**1.37**	**0.67**

	CO_2	CH_4	N_2O
Total:	**25,727.49**	**1.37**	**0.67**

EMISSIONS FROM GRADING WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	17.5
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	1050

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.110233729	2.874663379
N2O*	1.60084E-05	0.000330948
CH4	3.95079E-05	4.2179E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**2,092.07**	**0.18**	**0.04**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2023. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

UNDERGROUND UTILITY CONSTRUCTION

2023 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Excavators	Composite	119.58	0.01	0.00
Tractors/Loaders/Backhoes	Composite	66.80	0.00	0.00
Off-Hwy (Water) Trucks	Composite	260.07	0.01	0.01
Scrapers	Composite	262.48	0.01	0.01
Graders	Composite	132.74	0.01	0.00

Underground Utility Construction Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Excavators	1	8.0	956.63	0.04	0.02
Tractors/Loaders/Backhoes	3	8.0	1,603.14	0.08	0.04
Off-Hwy (Water) Trucks	3	8.0	6,241.78	0.27	0.16
Scrapers	1	8.0	2,099.86	0.12	0.05
Graders	1	8.0	1,061.94	0.05	0.03
		Subtotal:	**11,963.36**	**0.57**	**0.31**

	CO_2	CH_4	N_2O
Total:	**11,963.36**	**0.57**	**0.31**

EMISSIONS FROM UNDERGROUND UTILITY CONSTRUCTION WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	11.25
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	675

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.110233729	2.874663379
N2O*	1.60084E-05	0.000330948
CH4	3.95079E-05	4.2179E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**1,344.90**	**0.12**	**0.03**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2023. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

PAVING

2023 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Pavers	Composite	77.93	0.01	0.00
Rollers	Composite	67.03	0.00	0.00
Off-Hwy (Water) Trucks	Composite	260.07	0.01	0.01

Paving Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Pavers	2	8.0	1,246.93	0.12	0.03
Rollers	2	8.0	1,072.56	0.07	0.03
Off-Hwy (Water) Trucks	1	8.0	2,080.59	0.09	0.05
		Subtotal:	**4,400.07**	**0.27**	**0.11**

	CO_2	CH_4	N_2O
Total:	**4,400.07**	**0.27**	**0.11**

EMISSIONS FROM PAVING WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	6.25
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	375

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.110233729	2.874663379
N2O*	1.60084E-05	0.000330948
CH4	3.95079E-05	4.2179E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**747.17**	**0.07**	**0.02**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2023. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

BUILDING CONSTRUCTION

2023 SCAB Fleet Average Emission Factors For Diesel Engines (Emission Factors in lbs/hr)

		CO_2	CH_4	N_2O
Equipment Type	Max Horsepower Rating	Pounds per hour		
Forklifts	Composite	54.40	0.00	0.00
Tractors/Loaders/Backhoes	Composite	66.80	0.00	0.00
Off-Hwy (Water) Trucks	Composite	260.07	0.01	0.01
Sweepers/Scrubbers	Composite	78.54	0.00	0.00

Building Construction Equipment Emissions (lbs/day)

			CO_2	CH_4	N_2O
Equipment Type	# of equipment	Hours/day	Pounds per day		
Forklifts	5	8.0	2,175.83	0.09	0.06
Tractors/Loaders/Backhoes	5	8.0	2,671.90	0.13	0.07
Off-Hwy (Water) Trucks	5	8.0	10,402.96	0.45	0.27
Sweepers/Scrubbers	3	8.0	1,885.04	0.10	0.05
		Subtotal:	**17,135.74**	**0.77**	**0.44**

	CO_2	CH_4	N_2O
Total:	**17,135.74**	**0.77**	**0.44**

EMISSIONS FROM BUILDING CONSTRUCTION WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	22.5
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	1350

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.110233729	2.874663379
N2O*	1.60084E-05	0.000330948
CH4	3.95079E-05	4.2179E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**2,689.81**	**0.23**	**0.06**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2023. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

EMISSIONS FROM ARCHITECTURAL COATING WORKER TRIPS

Construction Worker Trip Emissions	
Number of Workers	15
Average Trip Length One-Way (miles)	30
Average Speed (MPH)	35
Daily VMT LDA & LDT	900

	LDA (pounds/mile)	LDT (pounds/mile)
CO2	1.110233729	2.874663379
N2O*	1.60084E-05	0.000330948
CH4	3.95079E-05	4.2179E-05

Emissions From Commuting (assumes 50% LDA and 50% LDT)

	CO2	N2O	CH4
Estimated Emissions (lbs/day) from worker trips	**1,793.20**	**0.16**	**0.04**

The number of workers is estimated as 125% of the total number of construction equipment (vehicles and machines) selected. The emission estimates assume a construction worker commute fleet mix of 50% light duty autos and 50% light duty trucks.

Emissions Factor Source: Highest (Most Conservative) EMFAC 2007 Emission Factors for On-Road Passanger Vehicles and Delivery Trucks, Analysis Year 2023. (http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)

*NOX to N2O conversion ratio of 0.04873 applied based on California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

SCAB Fleet Average Emission Factors (Diesel)

2023

Air Basin	SC

Equipment	MaxHP	(lb/hr) CO2	(lb/hr) CH4	(lb/hr) N2O
Aerial Lifts	15	8.7	0.0009	0.0002
	25	11.0	0.0012	0.0003
	50	19.6	0.0018	0.0005
	120	38.1	0.0018	0.0010
	500	213	0.0058	0.0055
	750	385	0.0105	0.0099
Aerial Lifts Total		34.7	0.0019	0.0009
Air Compressors	15	7.2	0.0008	0.0002
	25	14.4	0.0017	0.0004
	50	22.3	0.0027	0.0006
	120	47.0	0.0029	0.0012
	175	88.5	0.0043	0.0023
	250	131	0.0051	0.0034
	500	232	0.0089	0.0060
	750	358	0.0137	0.0093
	1000	486	0.0200	0.0126
Air Compressors Total		63.6	0.0035	0.0017
Bore/Drill Rigs	15	10.3	0.0011	0.0003
	25	16.0	0.0017	0.0004
	50	31.0	0.0017	0.0008
	120	77.1	0.0023	0.0020
	175	141	0.0030	0.0037
	250	188	0.0039	0.0049
	500	311	0.0065	0.0080
	750	615	0.0128	0.0159
	1000	928	0.0196	0.0240
Bore/Drill Rigs Total		165	0.0039	0.0043
Cement and Morta	15	6.3	0.0007	0.0002
	25	17.6	0.0019	0.0005
Cement and Mortar Mixers Total		7.2	0.0008	0.0002
Concrete/Industrial	25	16.5	0.0018	0.0004
	50	30.2	0.0029	0.0008
	120	74.1	0.0038	0.0019
	175	160	0.0064	0.0042
Concrete/Industrial Saws Total		58.5	0.0034	0.0015
Cranes	50	23.2	0.0036	0.0006
	120	50.1	0.0038	0.0013
	175	80.3	0.0047	0.0021
	250	112	0.0054	0.0029
	500	180	0.0085	0.0047
	750	303	0.0143	0.0078
	9999	971	0.0519	0.0251
Cranes Total		129	0.0068	0.0033
Crawler Tractors	50	24.9	0.0051	0.0007
	120	65.8	0.0062	0.0017

	175	121	0.0084	0.0032
	250	166	0.0091	0.0043
	500	259	0.0137	0.0067
	750	465	0.0246	0.0120
	1000	658	0.0373	0.0170
Crawler Tractors Total		114	0.0079	0.0030
Crushing/Proc. Equ	50	44.0	0.0052	0.0012
	120	83.1	0.0051	0.0022
	175	167	0.0081	0.0044
	250	245	0.0096	0.0063
	500	374	0.0145	0.0097
	750	589	0.0229	0.0152
	9999	1,308	0.0597	0.0338
Crushing/Proc. Equipment Total		132	0.0070	0.0034
Dumpers/Tenders	25	7.6	0.0008	0.0002
Dumpers/Tenders Total		7.6	0.0008	0.0002
Excavators	25	16.4	0.0018	0.0004
	50	25.0	0.0029	0.0007
	120	73.6	0.0044	0.0019
	175	112	0.0052	0.0029
	250	159	0.0064	0.0041
	500	234	0.0093	0.0060
	750	387	0.0154	0.0100
Excavators Total		120	0.0055	0.0031
Forklifts	50	14.7	0.0014	0.0004
	120	31.2	0.0017	0.0008
	175	56.1	0.0023	0.0015
	250	77.1	0.0028	0.0020
	500	111	0.0041	0.0029
Forklifts Total		54.4	0.0023	0.0014
Generator Sets	15	10.2	0.0010	0.0003
	25	17.6	0.0020	0.0005
	50	30.6	0.0026	0.0008
	120	77.9	0.0035	0.0020
	175	142	0.0048	0.0037
	250	213	0.0056	0.0055
	500	337	0.0086	0.0087
	750	544	0.0140	0.0140
	9999	1,049	0.0327	0.0271
Generator Sets Total		61.0	0.0029	0.0016
Graders	50	27.5	0.0040	0.0007
	120	75.0	0.0053	0.0020
	175	124	0.0067	0.0032
	250	172	0.0077	0.0045
	500	229	0.0100	0.0059
	750	486	0.0213	0.0126
Graders Total		133	0.0068	0.0034
Off-Highway Tractc	120	93.7	0.0111	0.0025
	175	130	0.0112	0.0034
	250	130	0.0088	0.0034
	750	568	0.0365	0.0147
	1000	814	0.0557	0.0211
Off-Highway Tractors Total		151	0.0113	0.0039

Off-Highway Truck	175	125	0.0062	0.0033
	250	167	0.0072	0.0043
	500	272	0.0116	0.0070
	750	442	0.0189	0.0114
	1000	625	0.0279	0.0162
Off-Highway Trucks Total		260	0.0112	0.0067
Other Construction	15	10.1	0.0011	0.0003
	25	13.2	0.0014	0.0003
	50	28.0	0.0024	0.0007
	120	80.9	0.0038	0.0021
	175	107	0.0039	0.0028
	500	254	0.0078	0.0066
Other Construction Equipment To		123	0.0044	0.0032
Other General Indu	15	6.4	0.0006	0.0002
	25	15.3	0.0017	0.0004
	50	21.7	0.0030	0.0006
	120	62.0	0.0044	0.0016
	175	95.9	0.0053	0.0025
	250	136	0.0060	0.0035
	500	265	0.0116	0.0069
	750	437	0.0191	0.0113
	1000	560	0.0262	0.0145
Other General Industrial Equipme		152	0.0074	0.0039
Other Material Han	50	30.3	0.0042	0.0008
	120	60.7	0.0042	0.0016
	175	122	0.0067	0.0032
	250	145	0.0064	0.0038
	500	192	0.0083	0.0050
	9999	741	0.0376	0.0192
Other Material Handling Equipme		141	0.0070	0.0037
Pavers	25	18.7	0.0020	0.0005
	50	28.0	0.0060	0.0007
	120	69.2	0.0068	0.0018
	175	128	0.0092	0.0033
	250	194	0.0109	0.0050
	500	233	0.0125	0.0060
Pavers Total		77.9	0.0074	0.0020
Paving Equipment	25	12.6	0.0014	0.0003
	50	23.9	0.0050	0.0006
	120	54.5	0.0052	0.0014
	175	101	0.0071	0.0026
	250	122	0.0067	0.0032
Paving Equipment Total		68.9	0.0056	0.0018
Plate Compactors	15	4.3	0.0005	0.0001
Plate Compactors Total		4.3	0.0005	0.0001
Pressure Washers	15	4.9	0.0005	0.0001
	25	7.1	0.0008	0.0002
	50	14.3	0.0008	0.0004
	120	24.1	0.0009	0.0006
Pressure Washers Total		9.4	0.0006	0.0002
Pumps	15	7.4	0.0008	0.0002
	25	19.5	0.0023	0.0005
	50	34.3	0.0032	0.0009

	120	77.9	0.0038	0.0020
	175	140	0.0051	0.0036
	250	201	0.0057	0.0052
	500	345	0.0095	0.0089
	750	571	0.0158	0.0147
	9999	1,355	0.0451	0.0350
Pumps Total		49.6	0.0027	0.0013
Rollers	15	6.3	0.0007	0.0002
	25	13.3	0.0015	0.0003
	50	26.0	0.0036	0.0007
	120	59.0	0.0041	0.0015
	175	108	0.0056	0.0028
	250	153	0.0065	0.0040
	500	219	0.0091	0.0057
Rollers Total		67.0	0.0042	0.0017
Rough Terrain Forl	50	33.9	0.0038	0.0009
	120	62.4	0.0037	0.0016
	175	125	0.0058	0.0032
	250	171	0.0067	0.0044
	500	257	0.0100	0.0066
Rough Terrain Forklifts Total		70.3	0.0040	0.0018
Rubber Tired Doze	175	129	0.0116	0.0034
	250	183	0.0132	0.0048
	500	265	0.0179	0.0069
	750	399	0.0271	0.0103
	1000	592	0.0426	0.0154
Rubber Tired Dozers Total		239	0.0165	0.0062
Rubber Tired Load	25	16.9	0.0018	0.0004
	50	31.1	0.0043	0.0008
	120	58.9	0.0040	0.0015
	175	106	0.0056	0.0028
	250	149	0.0065	0.0039
	500	237	0.0102	0.0061
	750	486	0.0209	0.0126
	1000	594	0.0268	0.0154
Rubber Tired Loaders Total		109	0.0056	0.0028
Scrapers	120	93.9	0.0091	0.0025
	175	148	0.0105	0.0039
	250	209	0.0117	0.0054
	500	321	0.0173	0.0083
	750	555	0.0299	0.0144
Scrapers Total		262	0.0148	0.0068
Signal Boards	15	6.2	0.0006	0.0002
	50	36.2	0.0035	0.0009
	120	80.2	0.0040	0.0021
	175	155	0.0060	0.0040
	250	255	0.0079	0.0066
Signal Boards Total		16.7	0.0011	0.0004
Skid Steer Loaders	25	13.8	0.0015	0.0004
	50	25.5	0.0018	0.0007
	120	42.8	0.0017	0.0011
Skid Steer Loaders Total		30.3	0.0018	0.0008
Surfacing Equipme	50	14.1	0.0018	0.0004

	120	63.8	0.0040	0.0017
	175	85.8	0.0040	0.0022
	250	135	0.0050	0.0035
	500	221	0.0079	0.0057
	750	347	0.0124	0.0090
Surfacing Equipment Total		166	0.0063	0.0043
Sweepers/Scrubbe	15	11.9	0.0011	0.0003
	25	19.6	0.0021	0.0005
	50	31.6	0.0031	0.0008
	120	75.0	0.0040	0.0020
	175	139	0.0060	0.0036
	250	162	0.0059	0.0042
Sweepers/Scrubbers Total		78.5	0.0042	0.0020
Tractors/Loaders/B	25	15.9	0.0017	0.0004
	50	30.3	0.0030	0.0008
	120	51.7	0.0027	0.0013
	175	101	0.0042	0.0026
	250	172	0.0062	0.0044
	500	345	0.0124	0.0089
	750	517	0.0186	0.0134
Tractors/Loaders/Backhoes Total		66.8	0.0033	0.0017
Trenchers	15	8.5	0.0009	0.0002
	25	32.9	0.0036	0.0009
	50	32.9	0.0072	0.0009
	120	64.9	0.0064	0.0017
	175	144	0.0102	0.0037
	250	223	0.0124	0.0058
	500	311	0.0164	0.0081
	750	587	0.0310	0.0152
Trenchers Total		58.7	0.0069	0.0015
Welders	15	6.2	0.0007	0.0002
	25	11.3	0.0013	0.0003
	50	26.0	0.0029	0.0007
	120	39.5	0.0023	0.0010
	175	98.2	0.0044	0.0026
	250	119	0.0042	0.0031
	500	168	0.0058	0.0043
Welders Total		25.6	0.0022	0.0007

GREENHOUSE GAS EMISSIONS RESULTING FROM ELECTRICITY USE

	Residential			
Input	1,702	Dwelling Units	11,658,700	Annual Energy Usage (kWh)
	6,850.00	Avg Annual Energy Usage Rate (kWh/DU)[1]		
Output	4,646.86	CO2 Emissions (mtpy)	0.88	CO2 produced per kWh (lbs)[2]
	0.04	N2O Emissions (mtpy)	0.000008	N2O produced per kWh (lbs)[2]
	0.19	CH4 Emissions (mtpy)	0.000036	CH4 produced per kWh (lbs)[2]
	Retail			
	200,000	Square Feet	2,710,000	Annual Energy Usage (kWh)
	13.55	Avg Annual Energy Usage Rate (kWh/SF)[1]		
	1,080.14	CO2 Emissions (mtpy)	0.88	CO2 produced per kWh (lbs)[2]
	0.01	N2O Emissions (mtpy)	0.000008	N2O produced per kWh (lbs)[2]
	0.04	CH4 Emissions (mtpy)	0.000036	CH4 produced per kWh (lbs)[2]

[1]Source: SCAQMD CEQA Handbook, 1993
[2]Source: EPA eGRID 2006, WECC California Subregion
mtpy= metric tons per year

GREENHOUSE GAS EMISSIONS RESULTING FROM NATURAL GAS USE

Residential (Single Family)

Input	129	Dwelling Units	10,317,420	Annual NG Usage (CF)
	6,665.00	Avg Monthly NG Rate (CF/DU)[1]	NG Emission Factors	
			CO2:	0.12 lb/CF
			N2O:	2.2E-06 lb/CF
Output	561.59	CO2 Emissions (mtpy)	CH4:	2.3E-06 lb/CF
	0.01	N2O Emissions (mtpy)		
	0.01	CH4 Emissions (mtpy)		

Residential (Multi-Family)

Input	1,573	Dwelling Units	75,721,074	Annual NG Usage (CF)
	4,011.50	Avg Monthly NG Rate (CF/DU)[1]	NG Emission Factors	
			CO2:	0.12 lb/CF
			N2O:	2.2E-06 lb/CF
Output	4,121.56	CO2 Emissions (mtpy)	CH4:	2.3E-06 lb/CF
	0.08	N2O Emissions (mtpy)		
	0.08	CH4 Emissions (mtpy)		

Retail

200,000	Square Feet	6,960,000	Annual NG Usage (CF)
2.90	Avg Monthly NG Rate (CF/SF)[1]	NG Emission Factors	
		CO2:	0.12 lb/CF
		N2O:	2.2E-06 lb/CF
378.84	CO2 Emissions (mtpy)	CH4:	2.3E-06 lb/CF
0.01	N2O Emissions (mtpy)		
0.01	CH4 Emissions (mtpy)		

[1]Source: SCAQMD CEQA Handbook, 1993
mtpy= metric tons per year

Carbon Dioxide Calculation
Based on URBEMIS 2007 Assumptions and EMFAC 2007 Emission Factors

Minutes since engine shutoff	5	10	20	30	40	50	60	120	180	240	300	360	420	480	540	600	660	720	Total
Home-Work	0.7%	1.0%	1.4%	2.2%	2.6%	2.8%	2.2%	2.6%	6.2%	8.9%	8.6%	8.6%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%	100.0%
Home-Shop	3.3%	9.5%	14.4%	18.3%	12.2%	7.5%	4.2%	3.6%	3.7%	2.1%	2.6%	2.6%	2.6%	2.6%	2.7%	2.7%	2.7%	2.7%	100.0%
Home-Other	6.1%	7.6%	7.6%	7.2%	7.0%	7.9%	6.2%	6.6%	7.2%	4.9%	4.0%	4.0%	4.0%	3.9%	3.9%	3.9%	3.9%	3.9%	100.0%
Commercial Commute	2.6%	5.0%	3.7%	4.2%	4.7%	3.7%	3.0%	3.3%	8.5%	10.8%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.4%	100.0%
Commercial Non-Commute	5.8%	11.3%	7.3%	7.4%	7.7%	5.5%	4.4%	4.4%	12.1%	13.9%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.7%	100.0%
Commercial Customer	9.3%	14.7%	13.2%	14.0%	6.7%	7.1%	5.1%	4.5%	8.8%	6.4%	1.2%	1.2%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	100.0%

Residential Trips	Home-Work %	Home-Shop %	Home-Other %
839.05	33%	18%	49%
3,966.31			

Commercial Trips	Commute	Non-Work	Customer
8,391.00	2.0%	1.0%	97.0%

Trips	5	10	20	30	40	50	60	120	180	240	300	360	420	480	540	600	660	720	Total
Home-Work	11.07	15.81	22.13	34.78	41.11	44.27	34.78	41.11	98.02	140.71	135.96	135.96	137.54	137.54	137.54	137.54	137.54	137.54	1,580.96
Home-Shop	28.54	82.17	124.55	158.29	105.53	64.87	36.33	31.14	32.00	18.16	22.49	22.49	22.49	22.49	23.35	23.35	23.35	23.35	864.96
Home-Other	143.93	179.32	184.04	169.88	165.16	186.40	146.28	155.72	169.88	115.61	94.38	94.38	94.38	92.02	92.02	92.02	92.02	92.02	2,359.43
Commercial Commute	4.36	8.39	6.21	7.05	7.89	6.21	5.03	5.54	14.26	18.12	10.57	10.57	10.57	10.57	10.57	10.57	10.57	10.74	167.82
Commercial Non-Commute	4.87	9.48	6.13	6.21	6.46	4.62	3.69	3.69	10.15	11.66	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.27	83.91
Commercial Customer	756.95	1,196.47	1,074.38	1,139.50	545.33	577.89	415.10	366.27	716.26	520.91	97.67	97.67	105.81	105.81	105.81	105.81	105.81	105.81	8,139.27
Total	949.72	1,491.64	1,417.44	1,515.70	871.47	884.25	641.22	603.46	1,040.58	825.18	363.17	363.17	372.89	370.53	371.40	371.40	371.40	371.73	13,196.36

User input from URBEMIS

Trip Distribution

Trips	Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
949.72	5	0	431.172	0	0	92.14165	1.880442	0	202.29	0	0	111.117	0	0	16.15091	4.742892	0	3.796023	2.852004	0
1491.64	10	0	677.2062	0	0	144.7193	2.953454	0	317.7201	0	0	174.5223	0	0	25.36689	7.449268	0	5.9621	4.479406	0
1417.44	20	0	643.5189	0	0	137.5203	2.806536	0	301.9153	0	0	165.8408	0	0	24.10503	7.078708	0	5.665518	4.25658	0
1515.70	30	0	688.1298	0	0	147.0536	3.001095	0	322.845	0	0	177.3374	0	0	25.77607	7.569428	0	6.058271	4.55166	0
871.47	40	0	395.6477	0	0	84.55009	1.725512	0	185.6233	0	0	101.9621	0	0	14.82023	4.352125	0	3.483268	2.617026	0
884.25	50	0	401.4481	0	0	85.78964	1.750809	0	188.3446	0	0	103.4569	0	0	15.0375	4.41593	0	3.534335	2.655394	0
641.22	60	0	291.1156	0	0	62.21154	1.269623	0	136.5807	0	0	75.0232	0	0	10.90465	3.202272	0	2.562972	1.925595	0
603.46	120	0	273.9724	0	0	58.54803	1.194858	0	128.5377	0	0	70.60523	0	0	10.2625	3.013697	0	2.412044	1.812201	0
1040.58	180	0	472.4215	0	0	100.9567	2.060341	0	221.6427	0	0	121.7474	0	0	17.69604	5.196637	0	4.159183	3.12485	0
825.18	240	0	374.6333	0	0	80.0593	1.633863	0	175.7641	0	0	96.54647	0	0	14.03307	4.120966	0	3.298258	2.478026	0
363.17	300	0	164.8796	0	0	35.23484	0.719078	0	77.35539	0	0	42.49099	0	0	6.176084	1.813675	0	1.451594	1.090602	0
363.17	360	0	164.8796	0	0	35.23484	0.719078	0	77.35539	0	0	42.49099	0	0	6.176084	1.813675	0	1.451594	1.090602	0
372.89	420	0	169.2926	0	0	36.17789	0.738324	0	79.4258	0	0	43.62826	0	0	6.341386	1.862218	0	1.490446	1.119792	0
370.53	480	0	168.2214	0	0	35.94898	0.733653	0	78.92324	0	0	43.3522	0	0	6.301261	1.850435	0	1.481015	1.112707	0
371.40	540	0	168.6141	0	0	36.0329	0.735365	0	79.10748	0	0	43.45341	0	0	6.315971	1.854755	0	1.484472	1.115304	0
371.40	600	0	168.6141	0	0	36.0329	0.735365	0	79.10748	0	0	43.45341	0	0	6.315971	1.854755	0	1.484472	1.115304	0
371.40	660	0	168.6141	0	0	36.0329	0.735365	0	79.10748	0	0	43.45341	0	0	6.315971	1.854755	0	1.484472	1.115304	0
371.73	720	0	168.7664	0	0	36.06546	0.73603	0	79.17897	0	0	43.49268	0	0	6.321679	1.856431	0	1.485814	1.116312	0
13196		0	5991	0	0	1280	26	0	2811	0	0	1544	0	0	224	66	0	53	40	0

Pollutant Name: Carbon Dioxide

Temperature: 80F
Relative Humidity: ALL

EMISSION FACTOR

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	111.902	11.771	0	115.109	14.676	0	115.069	14.861	0	156.919	20.156	0	170.667	24.152	0	170.667	23.821	0	170.667
10	121.432	13.38	0	124.911	16.749	0	124.868	16.95	0	170.282	23.044	0	185.2	28.094	0	185.2	27.889	0	185.2
20	139.927	17.07	0	143.936	21.476	0	143.887	21.72	0	196.218	29.618	0	213.408	36.902	0	213.408	36.924	0	213.408
30	157.671	21.388	0	162.189	26.982	0	162.133	27.278	0	221.1	37.257	0	240.47	46.943	0	240.47	47.159	0	240.47
40	174.663	26.334	0	179.668	33.265	0	179.606	33.624	0	244.928	45.959	0	266.386	58.217	0	266.386	58.595	0	266.386
50	190.904	31.908	0	196.374	40.325	0	196.307	40.758	0	267.702	55.726	0	291.155	70.724	0	291.155	71.231	0	291.155
60	206.393	38.111	0	212.306	48.164	0	212.234	48.681	0	289.422	66.557	0	314.778	84.463	0	314.778	85.066	0	314.778
120	279.289	87.417	0	287.292	109.943	0	287.194	111.197	0	391.644	151.599	0	425.955	188.589	0	425.955	188.596	0	425.955
180	279.509	99.401	0	287.518	125.082	0	287.42	126.499	0	391.952	172.516	0	426.29	215.096	0	426.29	215.279	0	426.29
240	279.728	111.326	0	287.743	140.133	0	287.645	141.714	0	392.259	193.301	0	426.625	241.329	0	426.625	241.649	0	426.625
300	279.948	123.192	0	287.969	155.094	0	287.871	156.841	0	392.567	213.955	0	426.96	267.288	0	426.96	267.704	0	426.96
360	280.167	135.001	0	288.195	169.968	0	288.097	171.881	0	392.875	234.477	0	427.294	292.973	0	427.295	293.447	0	427.294
420	280.387	146.751	0	288.421	184.752	0	288.322	186.833	0	393.183	254.867	0	427.629	318.385	0	427.629	318.875	0	427.629
480	280.606	158.444	0	288.647	199.448	0	288.548	201.698	0	393.49	275.126	0	427.964	343.522	0	427.964	343.99	0	427.964
540	280.826	170.078	0	288.872	214.056	0	288.774	216.475	0	393.798	295.253	0	428.299	368.385	0	428.299	368.792	0	428.299
600	281.045	181.653	0	289.098	228.575	0	288.999	231.165	0	394.106	315.248	0	428.633	392.975	0	428.633	393.28	0	428.633
660	281.265	193.171	0	289.324	243.005	0	289.225	245.767	0	394.414	335.111	0	428.968	417.29	0	428.968	417.454	0	428.968
720	281.484	204.63	0	289.55	257.347	0	289.451	260.282	0	394.722	354.843	0	429.303	441.332	0	429.303	441.315	0	429.303

Pollutant Name: Carbon Dioxide Emissions

EMISSIONS (GRAMS/DAY)

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	5075.326	0	0	1352.271	0	0	3006.231	0	0	2239.675	0	0	390.0767	0	0	90.42507	0	0
10	0	9061.019	0	0	2423.903	0	0	5385.356	0	0	4021.692	0	0	712.6574	0	0	166.277	0	0
20	0	10984.87	0	0	2953.385	0	0	6557.599	0	0	4911.872	0	0	889.5237	0	0	209.1936	0	0
30	0	14717.72	0	0	3967.801	0	0	8806.567	0	0	6607.06	0	0	1210.006	0	0	285.702	0	0
40	0	10418.99	0	0	2812.559	0	0	6241.396	0	0	4686.075	0	0	862.7894	0	0	204.1021	0	0
50	0	12809.41	0	0	3459.467	0	0	7676.55	0	0	5765.239	0	0	1063.512	0	0	251.7542	0	0
60	0	11094.71	0	0	2996.357	0	0	6648.885	0	0	4993.319	0	0	921.0398	0	0	218.0218	0	0
120	0	23949.85	0	0	6436.946	0	0	14293.01	0	0	10703.68	0	0	1935.395	0	0	454.9018	0	0
180	0	46959.17	0	0	12627.86	0	0	28037.58	0	0	21003.37	0	0	3806.347	0	0	895.3847	0	0
240	0	41706.43	0	0	11218.95	0	0	24908.23	0	0	18662.53	0	0	3386.587	0	0	797.0208	0	0
300	0	20311.84	0	0	5464.712	0	0	12132.5	0	0	9091.16	0	0	1650.793	0	0	388.5975	0	0
360	0	22258.91	0	0	5988.795	0	0	13295.92	0	0	9963.16	0	0	1809.426	0	0	425.9659	0	0
420	0	24843.85	0	0	6683.938	0	0	14839.36	0	0	11119.4	0	0	2019.002	0	0	475.2659	0	0
480	0	26653.67	0	0	7169.953	0	0	15918.66	0	0	11927.32	0	0	2164.622	0	0	509.4544	0	0
540	0	28677.54	0	0	7713.059	0	0	17124.79	0	0	12829.75	0	0	2326.709	0	0	547.4615	0	0
600	0	30629.25	0	0	8236.22	0	0	18286.88	0	0	13698.6	0	0	2482.019	0	0	583.8133	0	0
660	0	32571.35	0	0	8756.175	0	0	19442.01	0	0	14561.71	0	0	2635.592	0	0	619.6989	0	0
720	0	34534.68	0	0	9281.339	0	0	20608.86	0	0	15433.07	0	0	2789.959	0	0	655.7119	0	0
Total (grams/day):	0	407258.6	0	0	109543.7	0	0	243210.4	0	0	182218.7	0	0	33056.06	0	0	7778.752	0	0
Total (lbs/day):	0	897.8515	0	0	241.5025	0	0	536.1871	0	0	401.7235	0	0	72.87613	0	0	17.14921	0	0

Grand Total (lbs/day): 2289.9267

Pollutant Name: Methane

Temperature: 80F
Relative Humidity: ALL

EMISSION FACTOR

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0.083	0.001	0	0.068	0.001	0	0.07	0.001	0	0.278	0.001	0	0.3	0.005	0	0.3	0.004	0	0.45
10	0.083	0.001	0	0.067	0.002	0	0.07	0.002	0	0.275	0.003	0	0.297	0.009	0	0.297	0.009	0	0.446
20	0.083	0.003	0	0.068	0.003	0	0.07	0.004	0	0.278	0.005	0	0.3	0.018	0	0.3	0.017	0	0.45
30	0.087	0.004	0	0.071	0.005	0	0.073	0.006	0	0.29	0.008	0	0.314	0.026	0	0.314	0.025	0	0.471
40	0.094	0.005	0	0.076	0.006	0	0.079	0.008	0	0.313	0.01	0	0.338	0.033	0	0.338	0.032	0	0.507
50	0.103	0.006	0	0.084	0.007	0	0.087	0.009	0	0.345	0.012	0	0.373	0.04	0	0.373	0.038	0	0.559
60	0.108	0.006	0	0.087	0.008	0	0.091	0.01	0	0.359	0.014	0	0.387	0.046	0	0.387	0.044	0	0.581
120	0.12	0.009	0	0.097	0.012	0	0.101	0.016	0	0.4	0.021	0	0.432	0.07	0	0.432	0.066	0	0.647
180	0.13	0.011	0	0.106	0.013	0	0.11	0.017	0	0.435	0.023	0	0.47	0.074	0	0.47	0.07	0	0.705
240	0.141	0.011	0	0.114	0.014	0	0.119	0.018	0	0.47	0.025	0	0.508	0.078	0	0.508	0.074	0	0.762
300	0.152	0.012	0	0.123	0.015	0	0.128	0.019	0	0.506	0.026	0	0.546	0.083	0	0.546	0.079	0	0.819
360	0.162	0.012	0	0.132	0.015	0	0.137	0.021	0	0.541	0.028	0	0.584	0.087	0	0.584	0.083	0	0.877
420	0.173	0.013	0	0.14	0.016	0	0.146	0.022	0	0.576	0.029	0	0.623	0.092	0	0.623	0.087	0	0.934
480	0.184	0.014	0	0.149	0.017	0	0.154	0.023	0	0.612	0.03	0	0.661	0.096	0	0.661	0.091	0	0.991
540	0.194	0.014	0	0.158	0.018	0	0.163	0.023	0	0.647	0.032	0	0.699	0.1	0	0.699	0.095	0	1.049
600	0.205	0.015	0	0.166	0.018	0	0.172	0.024	0	0.683	0.033	0	0.737	0.104	0	0.737	0.099	0	1.106
660	0.215	0.015	0	0.175	0.019	0	0.181	0.025	0	0.718	0.034	0	0.776	0.108	0	0.776	0.103	0	1.163
720	0.226	0.016	0	0.183	0.02	0	0.19	0.026	0	0.753	0.036	0	0.814	0.113	0	0.814	0.107	0	1.221

Pollutant Name: Methane Emissions

EMISSIONS (GRAMS/DAY)

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	0.431172	0	0	0.092142	0	0	0.20229	0	0	0.111117	0	0	0.080755	0	0	0.015184	0	0
10	0	0.677206	0	0	0.289439	0	0	0.63544	0	0	0.523567	0	0	0.228302	0	0	0.053659	0	0
20	0	1.930557	0	0	0.412561	0	0	1.207661	0	0	0.829204	0	0	0.43389	0	0	0.096314	0	0
30	0	2.752519	0	0	0.735268	0	0	1.93707	0	0	1.418699	0	0	0.670178	0	0	0.151457	0	0
40	0	1.978238	0	0	0.507301	0	0	1.484986	0	0	1.019621	0	0	0.489068	0	0	0.111465	0	0
50	0	2.408689	0	0	0.600528	0	0	1.695102	0	0	1.241483	0	0	0.6015	0	0	0.134305	0	0
60	0	1.746694	0	0	0.497692	0	0	1.365807	0	0	1.050325	0	0	0.501614	0	0	0.112771	0	0
120	0	2.465752	0	0	0.702576	0	0	2.056604	0	0	1.48271	0	0	0.718375	0	0	0.159195	0	0
180	0	5.196637	0	0	1.312437	0	0	3.767926	0	0	2.80019	0	0	1.309507	0	0	0.291143	0	0
240	0	4.120966	0	0	1.12083	0	0	3.163754	0	0	2.413662	0	0	1.094579	0	0	0.244071	0	0
300	0	1.978555	0	0	0.528523	0	0	1.469752	0	0	1.104766	0	0	0.512615	0	0	0.114676	0	0
360	0	1.978555	0	0	0.528523	0	0	1.624463	0	0	1.189748	0	0	0.537319	0	0	0.120482	0	0
420	0	2.200803	0	0	0.578846	0	0	1.747368	0	0	1.265219	0	0	0.583408	0	0	0.129669	0	0
480	0	2.355099	0	0	0.611133	0	0	1.815235	0	0	1.300566	0	0	0.604921	0	0	0.134772	0	0
540	0	2.360597	0	0	0.648592	0	0	1.819472	0	0	1.390509	0	0	0.631597	0	0	0.141025	0	0
600	0	2.529211	0	0	0.648592	0	0	1.89858	0	0	1.433962	0	0	0.656861	0	0	0.146963	0	0
660	0	2.529211	0	0	0.684625	0	0	1.977687	0	0	1.477416	0	0	0.682125	0	0	0.152901	0	0
720	0	2.700263	0	0	0.721309	0	0	2.058653	0	0	1.565736	0	0	0.71435	0	0	0.158982	0	0
Total (grams/day):	0	42.34073	0	0	11.22092	0	0	31.92785	0	0	23.6185	0	0	11.05096	0	0	2.469032	0	0
Total (lbs/day):	0	0.093345	0	0	0.024738	0	0	0.070389	0	0	0.05207	0	0	0.024363	0	0	0.005443	0	0

Grand Total (lbs/day): 0.4411488

Pollutant Name: Oxides of Nitrogen

Temperature: 80F
Humidity: ALL

EMISSION FACTOR

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0.663	0.08	0	0.6	0.105	0	0.664	0.19	0	2.073	0.231	0	0.475	1.279	0	0.475	1.238	0	0.713
10	0.721	0.088	0	0.652	0.116	0	0.722	0.207	0	2.254	0.251	0	0.516	1.387	0	0.516	1.354	0	0.775
20	0.826	0.103	0	0.747	0.135	0	0.827	0.239	0	2.582	0.288	0	0.592	1.58	0	0.592	1.562	0	0.887
30	0.917	0.115	0	0.829	0.151	0	0.918	0.266	0	2.866	0.319	0	0.657	1.743	0	0.657	1.736	0	0.985
40	0.994	0.124	0	0.898	0.164	0	0.995	0.287	0	3.106	0.344	0	0.712	1.876	0	0.712	1.877	0	1.068
50	1.057	0.132	0	0.955	0.174	0	1.058	0.303	0	3.303	0.363	0	0.757	1.978	0	0.757	1.985	0	1.135
60	1.106	0.137	0	0.999	0.18	0	1.107	0.315	0	3.456	0.376	0	0.792	2.05	0	0.792	2.059	0	1.188
120	1.108	0.146	0	1.002	0.192	0	1.11	0.336	0	3.463	0.403	0	0.794	2.199	0	0.794	2.2	0	1.19
180	1.082	0.146	0	0.978	0.192	0	1.083	0.336	0	3.38	0.402	0	0.775	2.194	0	0.775	2.195	0	1.162
240	1.047	0.145	0	0.946	0.19	0	1.048	0.333	0	3.271	0.399	0	0.75	2.178	0	0.75	2.179	0	1.124
300	1.003	0.143	0	0.907	0.188	0	1.004	0.33	0	3.135	0.395	0	0.718	2.152	0	0.718	2.154	0	1.077
360	0.951	0.141	0	0.859	0.185	0	0.952	0.324	0	2.971	0.388	0	0.681	2.117	0	0.681	2.12	0	1.021
420	0.89	0.138	0	0.805	0.182	0	0.891	0.318	0	2.782	0.38	0	0.637	2.072	0	0.637	2.076	0	0.956
480	0.821	0.134	0	0.742	0.177	0	0.822	0.31	0	2.565	0.37	0	0.588	2.018	0	0.588	2.023	0	0.882
540	0.743	0.13	0	0.671	0.172	0	0.744	0.3	0	2.321	0.359	0	0.532	1.954	0	0.532	1.961	0	0.798
600	0.656	0.126	0	0.593	0.166	0	0.657	0.289	0	2.051	0.345	0	0.47	1.88	0	0.47	1.889	0	0.705
660	0.561	0.12	0	0.507	0.159	0	0.562	0.277	0	1.754	0.33	0	0.402	1.797	0	0.402	1.808	0	0.603
720	0.458	0.114	0	0.414	0.151	0	0.458	0.263	0	1.43	0.314	0	0.328	1.704	0	0.328	1.718	0	0.492

Pollutant Name: Nitrous Oxide

EMISSIONS (GRAMS/DAY)

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	1.680889	0	0	0.471459	0	0	1.872951	0	0	1.250809	0	0	1.006621	0	0	0.229007	0	0
10	0	2.904037	0	0	0.818056	0	0	3.204893	0	0	2.134633	0	0	1.714519	0	0	0.393384	0	0
20	0	3.229959	0	0	0.904688	0	0	3.516264	0	0	2.32746	0	0	1.855937	0	0	0.43124	0	0
30	0	3.856263	0	0	1.08206	0	0	4.184796	0	0	2.7567	0	0	2.189337	0	0	0.512504	0	0
40	0	2.39072	0	0	0.675704	0	0	2.596048	0	0	1.709211	0	0	1.354835	0	0	0.318603	0	0
50	0	2.582271	0	0	0.727416	0	0	2.780957	0	0	1.830057	0	0	1.449441	0	0	0.341875	0	0
60	0	1.9435	0	0	0.545685	0	0	2.096517	0	0	1.374618	0	0	1.089342	0	0	0.257157	0	0
120	0	1.949208	0	0	0.547787	0	0	2.104594	0	0	1.386566	0	0	1.099707	0	0	0.258587	0	0
180	0	3.361097	0	0	0.944571	0	0	3.629035	0	0	2.384977	0	0	1.891956	0	0	0.444878	0	0
240	0	2.647115	0	0	0.741249	0	0	2.852153	0	0	1.877188	0	0	1.489392	0	0	0.35022	0	0
300	0	1.148951	0	0	0.322796	0	0	1.24395	0	0	0.817885	0	0	0.64767	0	0	0.152366	0	0
360	0	1.132881	0	0	0.317645	0	0	1.221333	0	0	0.803391	0	0	0.637137	0	0	0.149961	0	0
420	0	1.138454	0	0	0.320858	0	0	1.230799	0	0	0.807886	0	0	0.640284	0	0	0.150779	0	0
480	0	1.098461	0	0	0.310069	0	0	1.192244	0	0	0.781648	0	0	0.619651	0	0	0.146	0	0
540	0	1.068158	0	0	0.302013	0	0	1.156478	0	0	0.760181	0	0	0.6014	0	0	0.141856	0	0
600	0	1.035292	0	0	0.291478	0	0	1.114074	0	0	0.730536	0	0	0.578624	0	0	0.136648	0	0
660	0	0.985992	0	0	0.279187	0	0	1.067814	0	0	0.698773	0	0	0.553078	0	0	0.130788	0	0
720	0	0.937539	0	0	0.265379	0	0	1.014762	0	0	0.665494	0	0	0.524929	0	0	0.12439	0	0
Total (grams/day):	0	35.09079	0	0	9.8681	0	0	38.07966	0	0	25.09801	0	0	19.94386	0	0	4.670243	0	0
Total (lbs/day):	0	0.077362	0	0	0.021755	0	0	0.083951	0	0	0.055332	0	0	0.043969	0	0	0.010296	0	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
1.899436	7.597745	0	0	17.09493	0	0	0.949718	0	0	0	16.13001	25.65758	0	0	0	0.949718	0	12.35203	0.94402
2.983287	11.93315	0	0	26.84959	0	0	1.491644	0	0	0	25.33408	40.29824	0	0	0	1.491644	0	19.40032	1.482694
2.834885	11.33954	0	0	25.51397	0	0	1.417443	0	0	0	24.07384	38.29363	0	0	0	1.417443	0	18.43526	1.408938
3.031409	12.12564	0	0	27.28268	0	0	1.515704	0	0	0	25.74272	40.94827	0	0	0	1.515704	0	19.71325	1.50661
1.742941	6.971765	0	0	15.68647	0	0	0.871471	0	0	0	14.80106	23.54365	0	0	0	0.871471	0	11.33435	0.866242
1.768494	7.073976	0	0	15.91645	0	0	0.884247	0	0	0	15.01805	23.88882	0	0	0	0.884247	0	11.50052	0.878942
1.282448	5.129791	0	0	11.54203	0	0	0.641224	0	0	0	10.89055	17.3233	0	0	0	0.641224	0	8.339758	0.637377
1.206927	4.827708	0	0	10.86234	0	0	0.603464	0	0	0	10.24922	16.30317	0	0	0	0.603464	0	7.848647	0.599843
2.081152	8.324609	0	0	18.73037	0	0	1.040576	0	0	0	17.67314	28.1122	0	0	0	1.040576	0	13.53373	1.034333
1.650367	6.601468	0	0	14.8533	0	0	0.825183	0	0	0	14.01492	22.29316	0	0	0	0.825183	0	10.73234	0.820232
0.726342	2.905367	0	0	6.537075	0	0	0.363171	0	0	0	6.168094	9.811424	0	0	0	0.363171	0	4.7234	0.360992
0.726342	2.905367	0	0	6.537075	0	0	0.363171	0	0	0	6.168094	9.811424	0	0	0	0.363171	0	4.7234	0.360992
0.745782	2.983129	0	0	6.71204	0	0	0.372891	0	0	0	6.333182	10.07403	0	0	0	0.372891	0	4.849822	0.370654
0.741063	2.964253	0	0	6.66957	0	0	0.370532	0	0	0	6.29311	10.01028	0	0	0	0.370532	0	4.819135	0.368308
0.742793	2.971173	0	0	6.685139	0	0	0.371397	0	0	0	6.3078	10.03365	0	0	0	0.371397	0	4.830385	0.369168
0.742793	2.971173	0	0	6.685139	0	0	0.371397	0	0	0	6.3078	10.03365	0	0	0	0.371397	0	4.830385	0.369168
0.742793	2.971173	0	0	6.685139	0	0	0.371397	0	0	0	6.3078	10.03365	0	0	0	0.371397	0	4.830385	0.369168
0.743465	2.973858	0	0	6.691181	0	0	0.371732	0	0	0	6.313501	10.04272	0	0	0	0.371732	0	4.83475	0.369502
26	106	0	0	238	0	0	13	0	0	0	224	357	0	0	0	13	0	172	13

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
9.546	0	170.667	9.546	0	170.667	9.546	0	0	9.546	0	35.73	1.771	0	170.667	9.546	0	170.667	9.546	0
19.039	0	185.2	19.039	0	185.2	19.039	0	0	19.039	0	38.773	3.533	0	185.2	19.039	0	185.2	19.039	0
37.866	0	213.408	37.866	0	213.408	37.866	0	0	37.866	0	44.678	7.026	0	213.408	37.866	0	213.408	37.866	0
56.482	0	240.47	56.482	0	240.47	56.482	0	0	56.482	0	50.344	10.481	0	240.47	56.482	0	240.47	56.482	0
74.887	0	266.386	74.887	0	266.386	74.887	0	0	74.887	0	55.769	13.896	0	266.386	74.887	0	266.386	74.887	0
93.081	0	291.155	93.081	0	291.155	93.081	0	0	93.081	0	60.955	17.272	0	291.155	93.081	0	291.155	93.081	0
111.063	0	314.778	111.063	0	314.778	111.063	0	0	111.063	0	65.901	20.609	0	314.778	111.063	0	314.778	111.063	0
188.899	0	425.955	188.899	0	425.955	188.899	0	0	188.899	0	89.176	35.052	0	425.955	188.899	0	425.955	188.899	0
223.17	0	426.29	223.17	0	426.29	223.17	0	0	223.17	0	89.247	41.411	0	426.29	223.17	0	426.29	223.17	0
255.419	0	426.625	255.419	0	426.625	255.419	0	0	255.419	0	89.317	47.395	0	426.625	255.419	0	426.625	255.419	0
285.644	0	426.96	285.644	0	426.96	285.644	0	0	285.644	0	89.387	53.004	0	426.96	285.644	0	426.96	285.644	0
313.847	0	427.294	313.847	0	427.294	313.847	0	0	313.847	0	89.457	58.237	0	427.294	313.847	0	427.294	313.847	0
340.027	0	427.629	340.027	0	427.629	340.027	0	0	340.027	0	89.527	63.095	0	427.629	340.027	0	427.629	340.027	0
364.184	0	427.964	364.184	0	427.964	364.184	0	0	364.184	0	89.597	67.577	0	427.964	364.184	0	427.964	364.184	0
386.319	0	428.299	386.318	0	428.299	386.319	0	0	386.319	0	89.667	71.685	0	428.299	386.318	0	428.299	386.319	0
406.43	0	428.633	406.43	0	428.633	406.43	0	0	406.43	0	89.737	75.417	0	428.633	406.43	0	428.633	406.43	0
424.519	0	428.968	424.519	0	428.968	424.519	0	0	424.519	0	89.807	78.773	0	428.968	424.519	0	428.968	424.519	0
440.586	0	429.303	440.585	0	429.303	440.585	0	0	440.586	0	89.877	81.754	0	429.303	440.585	0	429.303	440.586	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
18.13202	0	0	0	0	0	0	0	0	0	0	576.3254	45.43958	0	0	0	0	0	117.9125	0
56.79881	0	0	0	0	0	0	0	0	0	0	982.2781	142.3737	0	0	0	0	0	369.3626	0
107.3458	0	0	0	0	0	0	0	0	0	0	1075.571	269.051	0	0	0	0	0	698.0695	0
171.22	0	0	0	0	0	0	0	0	0	0	1295.992	429.1788	0	0	0	0	0	1113.444	0
130.5236	0	0	0	0	0	0	0	0	0	0	825.4402	327.1626	0	0	0	0	0	848.7953	0
164.6132	0	0	0	0	0	0	0	0	0	0	915.4253	412.6076	0	0	0	0	0	1070.48	0
142.4325	0	0	0	0	0	0	0	0	0	0	717.6979	357.016	0	0	0	0	0	926.2385	0
227.9873	0	0	0	0	0	0	0	0	0	0	913.9848	571.4587	0	0	0	0	0	1482.602	0
464.4507	0	0	0	0	0	0	0	0	0	0	1577.275	1164.154	0	0	0	0	0	3020.323	0
421.5351	0	0	0	0	0	0	0	0	0	0	1251.77	1056.584	0	0	0	0	0	2741.243	0
207.4752	0	0	0	0	0	0	0	0	0	0	551.3474	520.0447	0	0	0	0	0	1349.211	0
227.9602	0	0	0	0	0	0	0	0	0	0	551.7792	571.3879	0	0	0	0	0	1482.425	0
253.5861	0	0	0	0	0	0	0	0	0	0	566.9908	635.6207	0	0	0	0	0	1649.07	0
269.8834	0	0	0	0	0	0	0	0	0	0	563.8438	676.4649	0	0	0	0	0	1755.052	0
286.9551	0	0	0	0	0	0	0	0	0	0	565.6015	719.2623	0	0	0	0	0	1866.069	0
301.8935	0	0	0	0	0	0	0	0	0	0	566.0431	756.7079	0	0	0	0	0	1963.213	0
315.3298	0	0	0	0	0	0	0	0	0	0	566.4846	790.3808	0	0	0	0	0	2050.59	0
327.5601	0	0	0	0	0	0	0	0	0	0	567.4385	821.0324	0	0	0	0	0	2130.123	0
4095.682	0	0	0	0	0	0	0	0	0	0	14631.29	10265.93	0	0	0	0	0	26634.22	0
9.029434	0	0	0	0	0	0	0	0	0	0	32.25647	22.6325	0	0	0	0	0	58.71841	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.01	0	0.92	0.044	0	0.45	0.021	0	0	0.029	0	0.09	0.013	0	0.45	0.022	0	0.45	0.008	0
0.02	0	0.913	0.085	0	0.446	0.041	0	0	0.056	0	0.09	0.025	0	0.446	0.043	0	0.446	0.015	0
0.039	0	0.921	0.161	0	0.45	0.078	0	0	0.106	0	0.091	0.047	0	0.45	0.082	0	0.45	0.028	0
0.055	0	0.963	0.228	0	0.471	0.111	0	0	0.15	0	0.095	0.066	0	0.471	0.116	0	0.471	0.039	0
0.069	0	1.037	0.287	0	0.507	0.139	0	0	0.189	0	0.102	0.083	0	0.507	0.146	0	0.507	0.05	0
0.081	0	1.143	0.336	0	0.559	0.163	0	0	0.221	0	0.112	0.097	0	0.559	0.171	0	0.559	0.058	0
0.09	0	1.189	0.377	0	0.581	0.183	0	0	0.248	0	0.117	0.109	0	0.581	0.191	0	0.581	0.065	0
0.11	0	1.324	0.458	0	0.647	0.222	0	0	0.301	0	0.13	0.133	0	0.647	0.233	0	0.647	0.079	0
0.117	0	1.442	0.486	0	0.705	0.235	0	0	0.32	0	0.142	0.141	0	0.705	0.247	0	0.705	0.084	0
0.123	0	1.559	0.513	0	0.762	0.249	0	0	0.338	0	0.153	0.149	0	0.762	0.261	0	0.762	0.089	0
0.129	0	1.676	0.54	0	0.819	0.261	0	0	0.355	0	0.165	0.156	0	0.819	0.274	0	0.819	0.093	0
0.135	0	1.793	0.565	0	0.877	0.274	0	0	0.371	0	0.176	0.164	0	0.877	0.287	0	0.877	0.098	0
0.141	0	1.911	0.589	0	0.934	0.285	0	0	0.388	0	0.188	0.171	0	0.934	0.299	0	0.934	0.102	0
0.147	0	2.028	0.613	0	0.991	0.297	0	0	0.403	0	0.199	0.178	0	0.991	0.311	0	0.991	0.106	0
0.152	0	2.145	0.635	0	1.049	0.308	0	0	0.418	0	0.211	0.184	0	1.049	0.323	0	1.049	0.11	0
0.158	0	2.263	0.657	0	1.106	0.318	0	0	0.432	0	0.222	0.19	0	1.106	0.334	0	1.106	0.114	0
0.163	0	2.38	0.678	0	1.163	0.328	0	0	0.446	0	0.234	0.196	0	1.163	0.344	0	1.163	0.117	0
0.167	0	2.497	0.698	0	1.221	0.338	0	0	0.459	0	0.246	0.202	0	1.221	0.355	0	1.221	0.121	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.018994	0	0	0	0	0	0	0	0	0	0	1.451701	0.333549	0	0	0	0	0	0.098816	0
0.059666	0	0	0	0	0	0	0	0	0	0	2.280067	1.007456	0	0	0	0	0	0.291005	0
0.110561	0	0	0	0	0	0	0	0	0	0	2.19072	1.7998	0	0	0	0	0	0.516187	0
0.166727	0	0	0	0	0	0	0	0	0	0	2.445559	2.702586	0	0	0	0	0	0.768817	0
0.120263	0	0	0	0	0	0	0	0	0	0	1.509708	1.954123	0	0	0	0	0	0.566717	0
0.143248	0	0	0	0	0	0	0	0	0	0	1.682022	2.317215	0	0	0	0	0	0.66703	0
0.11542	0	0	0	0	0	0	0	0	0	0	1.274194	1.88824	0	0	0	0	0	0.542084	0
0.132762	0	0	0	0	0	0	0	0	0	0	1.332399	2.168322	0	0	0	0	0	0.620043	0
0.243495	0	0	0	0	0	0	0	0	0	0	2.509586	3.963821	0	0	0	0	0	1.136834	0
0.202995	0	0	0	0	0	0	0	0	0	0	2.144282	3.32168	0	0	0	0	0	0.955178	0
0.093698	0	0	0	0	0	0	0	0	0	0	1.017735	1.530582	0	0	0	0	0	0.439276	0
0.098056	0	0	0	0	0	0	0	0	0	0	1.085585	1.609074	0	0	0	0	0	0.462893	0
0.105155	0	0	0	0	0	0	0	0	0	0	1.190638	1.722658	0	0	0	0	0	0.494682	0
0.108936	0	0	0	0	0	0	0	0	0	0	1.252329	1.78183	0	0	0	0	0	0.510828	0
0.112905	0	0	0	0	0	0	0	0	0	0	1.330946	1.846192	0	0	0	0	0	0.531342	0
0.117361	0	0	0	0	0	0	0	0	0	0	1.400332	1.906394	0	0	0	0	0	0.550664	0
0.121075	0	0	0	0	0	0	0	0	0	0	1.476025	1.966596	0	0	0	0	0	0.565155	0
0.124159	0	0	0	0	0	0	0	0	0	0	1.553121	2.028629	0	0	0	0	0	0.585005	0
2.195477	0	0	0	0	0	0	0	0	0	0	29.12695	35.84875	0	0	0	0	0	10.30256	0
0.00484	0	0	0	0	0	0	0	0	0	0	0.064214	0.079033	0	0	0	0	0	0.022713	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.698	0	3.51	3.022	0	0.713	1.611	0	0	2.33	0	0.262	0.089	0	0.713	1.297	0	0.713	0.498	0
1.052	0	3.816	4.554	0	0.775	2.428	0	0	3.511	0	0.285	0.134	0	0.775	1.955	0	0.775	0.751	0
1.674	0	4.371	7.243	0	0.887	3.862	0	0	5.584	0	0.327	0.213	0	0.887	3.109	0	0.887	1.195	0
2.18	0	4.852	9.434	0	0.985	5.03	0	0	7.274	0	0.363	0.278	0	0.985	4.05	0	0.985	1.556	0
2.571	0	5.259	11.128	0	1.068	5.933	0	0	8.58	0	0.393	0.328	0	1.068	4.777	0	1.068	1.835	0
2.848	0	5.592	12.324	0	1.135	6.57	0	0	9.502	0	0.418	0.363	0	1.135	5.291	0	1.135	2.032	0
3.009	0	5.851	13.021	0	1.188	6.942	0	0	10.039	0	0.437	0.384	0	1.188	5.59	0	1.188	2.148	0
3.022	0	5.863	13.078	0	1.19	6.973	0	0	10.084	0	0.438	0.385	0	1.19	5.614	0	1.19	2.157	0
3.011	0	5.723	13.03	0	1.162	6.947	0	0	10.047	0	0.428	0.384	0	1.162	5.594	0	1.162	2.149	0
2.994	0	5.538	12.957	0	1.124	6.908	0	0	9.99	0	0.414	0.382	0	1.124	5.562	0	1.124	2.137	0
2.971	0	5.307	12.858	0	1.077	6.855	0	0	9.914	0	0.397	0.379	0	1.077	5.52	0	1.077	2.121	0
2.942	0	5.031	12.734	0	1.021	6.789	0	0	9.818	0	0.376	0.375	0	1.021	5.467	0	1.021	2.1	0
2.908	0	4.709	12.585	0	0.956	6.71	0	0	9.703	0	0.352	0.371	0	0.956	5.402	0	0.956	2.075	0
2.867	0	4.343	12.41	0	0.882	6.616	0	0	9.568	0	0.325	0.366	0	0.882	5.327	0	0.882	2.047	0
2.821	0	3.93	12.209	0	0.798	6.509	0	0	9.414	0	0.294	0.36	0	0.798	5.241	0	0.798	2.014	0
2.769	0	3.473	11.984	0	0.705	6.389	0	0	9.24	0	0.26	0.353	0	0.705	5.144	0	0.705	1.976	0
2.711	0	2.97	11.733	0	0.603	6.255	0	0	9.046	0	0.222	0.346	0	0.603	5.037	0	0.603	1.935	0
2.647	0	2.422	11.456	0	0.492	6.108	0	0	8.833	0	0.181	0.338	0	0.492	4.918	0	0.492	1.889	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.064607	0	0	0	0	0	0	0	0	0	0	0.205937	0.111277	0	0	0	0	0	0.299755	0
0.152936	0	0	0	0	0	0	0	0	0	0	0.351843	0.263142	0	0	0	0	0	0.709982	0
0.231254	0	0	0	0	0	0	0	0	0	0	0.383612	0.39747	0	0	0	0	0	1.073533	0
0.322032	0	0	0	0	0	0	0	0	0	0	0.455365	0.554726	0	0	0	0	0	1.494742	0
0.218365	0	0	0	0	0	0	0	0	0	0	0.283455	0.37631	0	0	0	0	0	1.013517	0
0.245438	0	0	0	0	0	0	0	0	0	0	0.305906	0.422571	0	0	0	0	0	1.138779	0
0.188044	0	0	0	0	0	0	0	0	0	0	0.231915	0.324161	0	0	0	0	0	0.872944	0
0.177735	0	0	0	0	0	0	0	0	0	0	0.218758	0.305866	0	0	0	0	0	0.82498	0
0.305361	0	0	0	0	0	0	0	0	0	0	0.368601	0.526047	0	0	0	0	0	1.41727	0
0.240786	0	0	0	0	0	0	0	0	0	0	0.282741	0.414986	0	0	0	0	0	1.117628	0
0.105158	0	0	0	0	0	0	0	0	0	0	0.119327	0.181205	0	0	0	0	0	0.488196	0
0.104132	0	0	0	0	0	0	0	0	0	0	0.113015	0.179292	0	0	0	0	0	0.483362	0
0.105683	0	0	0	0	0	0	0	0	0	0	0.108633	0.182127	0	0	0	0	0	0.490391	0
0.103534	0	0	0	0	0	0	0	0	0	0	0.099666	0.178536	0	0	0	0	0	0.480712	0
0.10211	0	0	0	0	0	0	0	0	0	0	0.09037	0.176019	0	0	0	0	0	0.474067	0
0.100228	0	0	0	0	0	0	0	0	0	0	0.079919	0.172597	0	0	0	0	0	0.465122	0
0.098129	0	0	0	0	0	0	0	0	0	0	0.068238	0.169174	0	0	0	0	0	0.455471	0
0.095899	0	0	0	0	0	0	0	0	0	0	0.055686	0.165412	0	0	0	0	0	0.445046	0
2.96143	0	0	0	0	0	0	0	0	0	0	3.822988	5.100918	0	0	0	0	0	13.7455	0
0.006529	0	0	0	0	0	0	0	0	0	0	0.008428	0.011246	0	0	0	0	0	0.030304	0

Pollutant Name: Carbon Dioxide Temperature: 80F Relative Humidity: 70%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4776.899	4776.899
5	1405.181	1097.924	353.976	1097.724	1399.088	1373.439	346.419	1358.676	1398.635	1392.531	348.474	1392.104	1905.384	1898.337	346.411	1896.433	2513.51	2513.51
10	1050.203	817.119	353.976	816.995	1051.182	1022.703	346.419	1012.984	1050.849	1036.891	348.474	1036.61	1431.799	1413.485	346.411	1412.186	1672.267	1672.267
15	823.613	635.981	353.976	635.908	824.408	796.205	346.419	789.743	824.146	807.239	348.474	807.053	1122.913	1100.412	346.411	1099.501	1175.484	1175.485
20	672.334	516.335	353.976	516.295	672.07	646.477	346.419	642.167	671.856	655.433	348.474	655.308	915.381	893.469	346.411	892.812	873	873
25	570.263	436.626	353.976	436.608	568.971	546.661	346.419	543.786	568.788	554.234	348.474	554.151	774.914	755.519	346.411	755.031	685.012	685.012
30	502.182	384.197	353.976	384.194	500.029	480.961	346.419	479.03	499.868	487.628	348.474	487.572	680.979	664.727	346.411	664.347	567.895	567.895
35	458.92	351.477	353.976	351.482	456.063	439.921	346.419	438.58	455.914	446.023	348.474	445.984	621.067	608.017	346.411	607.705	497.421	497.421
40	435.056	333.983	353.976	333.994	431.613	417.942	346.419	416.916	431.471	423.743	348.474	423.713	587.741	577.651	346.411	577.374	460.326	460.326
45	427.707	329.25	353.976	329.262	423.77	411.942	346.419	411.003	423.63	417.664	348.474	417.636	577.04	569.37	346.411	569.101	450.085	450.085
50	435.93	336.265	353.976	336.274	431.586	420.668	346.419	419.603	431.444	426.513	348.474	426.481	587.67	581.438	346.411	581.153	464.953	464.953
55	460.523	355.245	353.976	355.249	455.88	444.41	346.419	443.004	455.729	450.585	348.474	450.544	620.746	614.255	346.411	613.93	507.469	507.469
60	504.168	387.704	353.976	387.7	499.389	485.093	346.419	483.102	499.224	491.828	348.474	491.77	680.003	670.477	346.411	670.085	585.19	585.19
65	571.954	436.845	353.976	436.827	567.308	546.762	346.419	543.886	567.122	554.344	348.474	554.26	772.518	755.69	346.411	755.199	712.968	712.968

Pollutant Name: Methane Temperature: 80F Relative Humidity: 70%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.888	0.93
5	0.491	0.04	0.016	0.04	0.432	0.046	0.009	0.046	0.436	0.064	0.012	0.064	1.203	0.072	0.008	0.073	0.728	0.049
10	0.382	0.03	0.012	0.03	0.339	0.035	0.007	0.035	0.342	0.049	0.009	0.049	0.889	0.056	0.006	0.057	0.515	0.034
15	0.312	0.022	0.01	0.022	0.28	0.027	0.006	0.027	0.283	0.037	0.007	0.037	0.691	0.043	0.005	0.044	0.387	0.025
20	0.267	0.017	0.008	0.017	0.242	0.022	0.005	0.021	0.244	0.028	0.006	0.029	0.563	0.034	0.004	0.034	0.307	0.019
25	0.238	0.014	0.007	0.014	0.217	0.018	0.004	0.017	0.218	0.023	0.005	0.023	0.48	0.028	0.004	0.028	0.256	0.015
30	0.218	0.011	0.006	0.011	0.2	0.015	0.003	0.015	0.201	0.019	0.004	0.019	0.425	0.023	0.003	0.024	0.222	0.012
35	0.206	0.01	0.005	0.01	0.189	0.013	0.003	0.013	0.191	0.017	0.004	0.017	0.392	0.021	0.003	0.021	0.199	0.01
40	0.2	0.009	0.005	0.009	0.184	0.012	0.003	0.012	0.185	0.015	0.003	0.015	0.373	0.019	0.002	0.019	0.183	0.009
45	0.198	0.009	0.004	0.009	0.182	0.011	0.002	0.011	0.183	0.015	0.003	0.015	0.368	0.018	0.002	0.018	0.173	0.008
50	0.2	0.008	0.004	0.008	0.184	0.011	0.002	0.011	0.185	0.014	0.003	0.014	0.374	0.018	0.002	0.018	0.167	0.008
55	0.207	0.009	0.004	0.009	0.19	0.011	0.002	0.011	0.191	0.015	0.003	0.015	0.393	0.018	0.002	0.019	0.163	0.007
60	0.219	0.009	0.004	0.01	0.201	0.012	0.002	0.012	0.202	0.016	0.003	0.016	0.427	0.02	0.002	0.02	0.163	0.007
65	0.239	0.011	0.004	0.011	0.218	0.014	0.002	0.014	0.219	0.018	0.003	0.018	0.482	0.022	0.002	0.022	0.165	0.008

Pollutant Name: Oxides of Nitrogen Temperature: 80F Relative Humidity: 70%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.288	1.373
5	1.501	0.093	1.76	0.094	1.324	0.147	1.795	0.171	1.462	0.219	1.773	0.22	4.542	0.253	1.806	0.258	1.052	0.144
10	1.578	0.081	1.46	0.081	1.392	0.126	1.489	0.146	1.537	0.189	1.471	0.19	4.776	0.218	1.498	0.223	1.105	0.151
15	1.657	0.071	1.255	0.072	1.462	0.111	1.28	0.128	1.614	0.166	1.265	0.167	5.016	0.192	1.288	0.197	1.158	0.158
20	1.738	0.064	1.118	0.065	1.533	0.099	1.14	0.115	1.693	0.149	1.126	0.149	5.26	0.172	1.147	0.177	1.212	0.166
25	1.82	0.059	1.032	0.059	1.605	0.091	1.052	0.105	1.773	0.136	1.039	0.137	5.508	0.158	1.059	0.163	1.265	0.173
30	1.904	0.055	0.987	0.055	1.679	0.085	1.006	0.099	1.854	0.127	0.994	0.128	5.76	0.147	1.012	0.153	1.318	0.18
35	1.988	0.052	0.978	0.053	1.753	0.081	0.997	0.095	1.936	0.121	0.985	0.121	6.016	0.14	1.003	0.146	1.372	0.187
40	2.074	0.051	1.004	0.051	1.829	0.079	1.023	0.093	2.02	0.117	1.011	0.118	6.275	0.136	1.03	0.142	1.425	0.195
45	2.16	0.05	1.067	0.05	1.905	0.078	1.088	0.093	2.104	0.116	1.075	0.116	6.536	0.134	1.095	0.14	1.478	0.202
50	2.247	0.05	1.176	0.051	1.981	0.079	1.2	0.096	2.188	0.117	1.185	0.117	6.799	0.136	1.207	0.142	1.532	0.209
55	2.334	0.051	1.344	0.052	2.058	0.082	1.37	0.101	2.273	0.12	1.354	0.12	7.063	0.139	1.379	0.146	1.585	0.217
60	2.421	0.053	1.59	0.054	2.135	0.087	1.621	0.109	2.358	0.126	1.602	0.126	7.327	0.146	1.631	0.154	1.638	0.224
65	2.508	0.057	1.949	0.057	2.212	0.093	1.987	0.121	2.443	0.135	1.963	0.136	7.59	0.157	2	0.165	1.692	0.231

LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT
4098	4638.063	4776.9	4776.9	4098	4475.405	4776.9	4776.9	4098	4212.735	0	0	6617.134	6532.608	4776.9	4776.901	4098.001	4295.151	0	0
519.397	2105.712	2513.51	2513.51	521.394	1628.823	2513.51	2513.51	1505	1675.44	2513.51	2513.51	3845.36	3828.347	2513.51	2513.51	1505	1797.868	0	2513.51
519.397	1436.504	1672.267	1672.267	521.394	1161.171	1672.267	1672.267	1505	1533.268	1672.267	1672.267	3165.446	3146.372	1672.267	1672.267	1505	1553.574	0	1672.267
519.397	1041.314	1175.484	1175.484	521.394	885.007	1175.484	1175.484	1505	1449.311	1175.484	1175.484	2595.958	2577.813	1175.484	1175.484	1505	1409.31	0	1175.484
519.397	800.688	873	873	521.394	716.854	873	873	1505	1398.191	873	873	2183.16	2166.424	873	873	1505	1321.47	0	873
519.397	651.143	685.012	685.012	521.394	612.35	685.012	685.012	1505	1366.42	685.012	685.012	2042.685	2025.342	685.012	685.011	1505	1266.878	0	685.011
519.397	557.977	567.895	567.895	521.394	547.244	567.895	567.895	1505	1346.627	567.895	567.895	1924.234	1906.908	567.895	567.895	1505	1232.868	0	567.895
519.397	501.915	497.421	497.421	521.394	508.067	497.421	497.421	1505	1334.717	497.421	497.421	1827.808	1810.814	497.421	497.421	1505	1212.403	0	497.421
519.397	472.407	460.326	460.326	521.394	487.446	460.326	460.326	1505	1328.448	460.326	460.326	1753.407	1736.889	460.326	460.326	1505	1201.631	0	460.326
519.397	464.259	450.085	450.085	521.394	481.753	450.085	450.085	1505	1326.717	450.085	450.085	1701.031	1685.051	450.085	450.085	1505	1198.656	0	450.085
519.397	476.087	464.953	464.953	521.394	490.018	464.953	464.953	1505	1329.23	464.953	464.953	1670.679	1655.277	464.953	464.953	1505	1202.974	0	464.953
519.397	509.909	507.469	507.469	521.394	513.653	507.469	507.469	1505	1336.415	507.469	507.469	1662.352	1647.599	507.469	507.469	1505	1215.321	0	507.469
519.397	571.735	585.19	585.19	521.394	556.859	585.19	585.19	1505	1349.55	585.19	585.19	1676.049	1662.115	585.19	585.19	1505	1237.891	0	585.19
519.397	673.382	712.968	712.968	521.394	627.891	712.968	712.968	1505	1371.145	712.968	712.968	1711.772	1699.013	712.968	712.968	1505	1274.997	0	712.968

LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT
0.147	0.77	0.888	0.936	0.147	0.586	0.888	0.934	0.147	0.28	0	0	0.397	0.392	0.888	0.91	0.147	0.369	0	0
0.015	0.042	0.728	0.042	0.017	0.031	1.036	0.062	0.017	0.024	3.333	0.335	0.183	0.185	1.036	0.149	0.013	0.052	0	0.232
0.012	0.03	0.515	0.029	0.013	0.022	0.717	0.043	0.013	0.018	2.223	0.255	0.1	0.102	0.717	0.112	0.01	0.04	0	0.162
0.009	0.022	0.387	0.021	0.011	0.016	0.525	0.031	0.011	0.014	1.554	0.206	0.048	0.05	0.525	0.089	0.008	0.032	0	0.117
0.008	0.016	0.307	0.016	0.009	0.013	0.406	0.024	0.009	0.011	1.139	0.173	0.027	0.029	0.406	0.074	0.007	0.026	0	0.089
0.007	0.013	0.256	0.012	0.007	0.01	0.329	0.019	0.007	0.009	0.874	0.15	0.023	0.024	0.329	0.065	0.006	0.023	0	0.071
0.006	0.011	0.222	0.01	0.006	0.008	0.279	0.016	0.006	0.008	0.701	0.134	0.019	0.021	0.279	0.058	0.005	0.02	0	0.058
0.005	0.009	0.199	0.008	0.005	0.007	0.246	0.014	0.005	0.007	0.587	0.122	0.017	0.018	0.246	0.053	0.004	0.018	0	0.049
0.004	0.008	0.183	0.007	0.005	0.006	0.224	0.012	0.005	0.006	0.511	0.112	0.014	0.016	0.224	0.049	0.004	0.017	0	0.043
0.004	0.007	0.173	0.006	0.004	0.006	0.209	0.011	0.004	0.006	0.462	0.106	0.013	0.014	0.209	0.047	0.003	0.016	0	0.039
0.004	0.007	0.167	0.006	0.004	0.005	0.2	0.011	0.004	0.005	0.431	0.101	0.012	0.013	0.2	0.045	0.003	0.015	0	0.037
0.004	0.007	0.163	0.006	0.004	0.005	0.195	0.01	0.004	0.005	0.416	0.099	0.012	0.013	0.195	0.044	0.003	0.015	0	0.036
0.004	0.007	0.163	0.006	0.004	0.005	0.194	0.01	0.004	0.005	0.413	0.098	0.013	0.014	0.194	0.044	0.003	0.015	0	0.036
0.004	0.007	0.165	0.006	0.004	0.005	0.198	0.011	0.004	0.005	0.424	0.1	0.014	0.015	0.198	0.045	0.003	0.015	0	0.036

LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT
75.051	16.44	1.288	1.384	75.051	34.099	1.288	1.38	75.051	62.6	0	0	121.036	119.49	1.288	1.333	75.051	53.643	0	0
2.747	0.676	1.052	0.125	2.905	1.359	1.578	0.243	3.337	2.814	11.522	2.978	10.136	10.045	1.578	1.189	2.51	2.126	0	1.743
2.279	0.586	1.105	0.131	2.41	1.143	1.658	0.256	2.768	2.344	12.106	3.129	7.339	7.285	1.658	1.25	2.082	1.84	0	1.831
1.959	0.527	1.158	0.138	2.072	0.996	1.738	0.268	2.38	2.023	12.69	3.28	5.47	5.442	1.738	1.31	1.79	1.651	0	1.92
1.745	0.489	1.212	0.144	1.845	0.899	1.818	0.28	2.12	1.809	13.274	3.431	4.538	4.524	1.818	1.37	1.594	1.529	0	2.008
1.61	0.467	1.265	0.15	1.703	0.84	1.898	0.293	1.956	1.675	13.858	3.582	4.178	4.171	1.898	1.431	1.471	1.46	0	2.097
1.54	0.458	1.318	0.157	1.628	0.81	1.978	0.305	1.87	1.606	14.442	3.733	3.879	3.878	1.978	1.491	1.407	1.431	0	2.185
1.526	0.461	1.372	0.163	1.613	0.807	2.057	0.317	1.853	1.594	15.026	3.883	3.642	3.645	2.057	1.551	1.394	1.44	0	2.273
1.566	0.475	1.425	0.169	1.656	0.83	2.137	0.33	1.903	1.637	15.61	4.034	3.465	3.472	2.137	1.612	1.431	1.484	0	2.362
1.666	0.502	1.478	0.176	1.762	0.88	2.217	0.342	2.024	1.74	16.194	4.185	3.349	3.36	2.217	1.672	1.522	1.566	0	2.45
1.836	0.542	1.532	0.182	1.942	0.963	2.297	0.354	2.23	1.914	16.778	4.336	3.294	3.307	2.297	1.732	1.678	1.694	0	2.538
2.097	0.601	1.585	0.188	2.217	1.089	2.377	0.367	2.547	2.179	17.363	4.487	3.3	3.315	2.377	1.792	1.916	1.88	0	2.627
2.481	0.686	1.638	0.195	2.624	1.273	2.457	0.379	3.014	2.569	17.947	4.638	3.367	3.383	2.457	1.853	2.267	2.147	0	2.715
3.042	0.806	1.692	0.201	3.216	1.54	2.537	0.391	3.695	3.137	18.531	4.789	3.495	3.511	2.537	1.913	2.779	2.528	0	2.803

UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	4776.9	4776.899	4098	4148.399	0	0	0	0	6.722	138.742	5938.969	768.899
2451.663	2488.488	231.943	281.941	0	263.855	2513.51	2513.51	1505	1579.869	2513.51	2513.51	1505	2409.955	286.146	1337.764	3217.095	1537.817
2451.663	1987.604	198.436	232.632	0	220.263	1672.267	1672.267	1505	1517.418	1672.267	1672.267	1505	1655.092	237.821	989.096	2693.716	1171.38
2451.663	1691.814	172.413	198.886	0	189.31	1175.484	1175.484	1505	1480.538	1175.484	1175.484	1505	1209.32	202.415	765.655	2255.341	925.336
2451.663	1511.713	152.135	176.168	0	167.474	873	873	1505	1458.083	873	873	1505	937.895	176.003	618.904	1937.58	760.482
2451.663	1399.782	136.332	161.675	0	152.508	685.012	685.011	1505	1444.127	685.012	685.012	1505	769.209	156.16	521.585	1829.447	662.304
2451.663	1330.05	124.073	153.748	0	143.014	567.895	567.895	1505	1435.433	567.895	567.895	1505	664.118	141.278	457.793	1738.267	595.734
2451.663	1288.089	114.674	151.538	0	138.203	497.421	497.421	1505	1430.201	497.421	497.421	1505	600.881	130.272	418.076	1664.041	552.382
2451.663	1266.003	107.637	154.845	0	137.769	460.326	460.326	1505	1427.447	460.326	460.326	1505	567.595	122.412	396.879	1606.769	527.317
2451.663	1259.905	102.606	164.092	0	141.851	450.085	450.085	1505	1426.687	450.085	450.085	1505	558.405	117.221	391.177	1566.451	517.852
2451.663	1268.757	99.332	180.404	0	151.078	464.953	464.953	1505	1427.791	464.953	464.953	1505	571.747	114.417	399.771	1543.087	522.925
2451.663	1294.072	97.66	205.836	0	166.706	507.469	507.469	1505	1430.947	507.469	507.469	1505	609.897	113.889	423.026	1536.677	542.857
2451.663	1340.348	97.511	243.808	0	190.888	585.19	585.19	1505	1436.717	585.19	585.19	1505	679.637	115.688	462.966	1547.221	579.445
2451.663	1416.428	98.879	299.87	0	227.165	712.968	712.968	1505	1446.202	712.968	712.968	1505	794.295	120.052	523.814	1574.719	636.435

UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0.888	0.918	0.147	0.205	0	0	0	0	0.001	0.027	0.336	0.061
0.053	0.159	0.313	0.278	0	0.29	1.036	0.326	0.047	0.068	1.036	0.067	0.009	0.062	0.334	0.053	0.145	0.064
0.038	0.112	0.27	0.232	0	0.246	0.717	0.233	0.037	0.051	0.717	0.049	0.007	0.045	0.284	0.04	0.08	0.046
0.029	0.081	0.241	0.204	0	0.217	0.525	0.175	0.029	0.04	0.525	0.037	0.006	0.034	0.252	0.031	0.039	0.032
0.022	0.062	0.223	0.185	0	0.199	0.406	0.139	0.024	0.033	0.406	0.029	0.005	0.027	0.231	0.024	0.023	0.025
0.018	0.049	0.212	0.173	0	0.187	0.329	0.116	0.02	0.027	0.329	0.024	0.004	0.022	0.218	0.02	0.019	0.02
0.015	0.04	0.206	0.167	0	0.181	0.279	0.1	0.017	0.024	0.279	0.02	0.003	0.019	0.211	0.017	0.016	0.017
0.013	0.034	0.205	0.164	0	0.179	0.246	0.089	0.015	0.021	0.246	0.018	0.003	0.016	0.209	0.015	0.014	0.015
0.012	0.03	0.209	0.164	0	0.18	0.224	0.082	0.014	0.019	0.224	0.016	0.003	0.015	0.212	0.013	0.012	0.014
0.011	0.028	0.218	0.168	0	0.186	0.209	0.077	0.012	0.017	0.209	0.015	0.002	0.013	0.22	0.013	0.011	0.013
0.01	0.026	0.233	0.177	0	0.197	0.2	0.074	0.012	0.016	0.2	0.014	0.002	0.013	0.235	0.013	0.01	0.013
0.01	0.026	0.257	0.191	0	0.215	0.195	0.072	0.011	0.016	0.195	0.013	0.002	0.012	0.259	0.013	0.01	0.014
0.011	0.026	0.293	0.212	0	0.242	0.194	0.072	0.011	0.016	0.194	0.013	0.002	0.012	0.295	0.014	0.011	0.015
0.011	0.026	0.349	0.246	0	0.283	0.198	0.073	0.011	0.016	0.198	0.013	0.002	0.012	0.35	0.016	0.012	0.017

UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	1.288	1.348	75.051	69.579	0	0	0	0	0.002	0.04	108.651	11.85
15.515	7.315	0.72	0.898	0	0.833	1.578	1.29	14.868	13.86	1.578	0.258	5.701	0.817	0.807	0.162	8.693	1.092
11.868	5.892	0.755	0.826	0	0.8	1.658	1.355	12.335	11.52	1.658	0.271	4.73	0.729	0.847	0.142	6.384	0.824
9.543	5.004	0.79	0.771	0	0.778	1.738	1.42	10.604	9.922	1.738	0.284	4.066	0.673	0.887	0.127	4.84	0.643
8.067	4.46	0.826	0.732	0	0.766	1.818	1.486	9.445	8.854	1.818	0.297	3.622	0.639	0.928	0.116	4.052	0.548
7.169	4.149	0.862	0.705	0	0.762	1.898	1.551	8.716	8.185	1.898	0.31	3.342	0.622	0.969	0.108	3.731	0.506
6.698	4.011	0.899	0.689	0	0.765	1.978	1.617	8.335	7.836	1.978	0.323	3.196	0.619	1.01	0.103	3.478	0.473
6.579	4.015	0.936	0.684	0	0.775	2.057	1.682	8.258	7.77	2.057	0.336	3.167	0.628	1.053	0.099	3.29	0.45
6.792	4.154	0.973	0.687	0	0.791	2.137	1.747	8.478	7.978	2.137	0.349	3.251	0.648	1.095	0.097	3.167	0.435
7.373	4.442	1.011	0.7	0	0.813	2.217	1.813	9.018	8.483	2.217	0.362	3.458	0.681	1.137	0.097	3.111	0.429
8.413	4.915	1.048	0.724	0	0.841	2.297	1.878	9.939	9.341	2.297	0.375	3.811	0.729	1.18	0.098	3.124	0.432
10.093	5.647	1.085	0.758	0	0.876	2.377	1.944	11.35	10.652	2.377	0.388	4.352	0.796	1.223	0.101	3.213	0.444
12.728	6.766	1.122	0.804	0	0.919	2.457	2.009	13.429	12.582	2.457	0.401	5.15	0.89	1.265	0.106	3.391	0.468
16.875	8.496	1.159	0.866	0	0.972	2.537	2.074	16.464	15.396	2.537	0.414	6.313	1.021	1.307	0.112	3.674	0.505

Vehicle Miles Traveled: 123,840

VEHICLE PERCENTAGES

Vehicle Type	Percent	Non-catalyst	Catalyst	Diesel
Light Auto	45.4%	0.0%	100.0%	0.0%
Light Truck < 3,750 lbs	9.9%	0.0%	98.0%	2.0%
Light Truck 3,751-5,750	21.3%	0.0%	100.0%	0.0%
Medium Truck 5,751-8,500	11.7%	0.0%	100.0%	0.0%
Lite-Heavy 8,501-10,000	2.2%	0.0%	77.3%	22.7%
Lite-Heavy 10,001-14,000	0.7%	0.0%	57.1%	42.9%
Med-Heavy 14,001-33,000	1.0%	0.0%	20.0%	80.0%
Heavy-Heavy 33,001-60,000	1.8%	0.0%	0.0%	100.0%
Line Haul > 60,000 lbs	0.1%	0.0%	0.0%	100.0%
Urban Bus	0.0%	0.0%	0.0%	0.0%
Motorcycle	4.4%	38.6%	61.4%	0.0%
School Bus	0.1%	0.0%	0.0%	100.0%
Motorhome	1.4%	0.0%	92.9%	7.1%

CO2 EMISSION FACTORS (grams/mile)

Vehicle Type	EMFAC Type	Non-catalyst	Catalyst	Diesel
Light Auto	LDA	502.182	384.197	353.976
Light Truck < 3,750 lbs	LDT1	500.029	480.961	346.419
Light Truck 3,751-5,750	LDT2	499.868	487.628	348.474
Medium Truck 5,751-8,500	MDV	680.979	664.727	346.411
Lite-Heavy 8,501-10,000	LHDT1	567.895	567.895	519.397
Lite-Heavy 10,001-14,000	LHDT2	567.895	567.895	521.394
Med-Heavy 14,001-33,000	MHDT	567.895	567.895	1505
Heavy-Heavy 33,001-60,000	HHDT	567.895	567.895	1924.234
Line Haul > 60,000 lbs	LHV	567.895	567.895	1505
Urban Bus	UB	0	567.895	2451.663
Motorcycle	MCY	124.073	153.748	0
School Bus	SBUS	567.895	567.895	1505
Motorhome	MH	567.895	567.895	1505

METHANE EMISSION FACTORS (grams/mile)

Vehicle Type	EMFAC Type	Non-catalyst	Catalyst	Diesel
Light Auto	LDA	0.218	0.011	0.006
Light Truck < 3,750 lbs	LDT1	0.2	0.015	0.003
Light Truck 3,751-5,750	LDT2	0.201	0.019	0.004
Medium Truck 5,751-8,500	MDV	0.425	0.023	0.003
Lite-Heavy 8,501-10,000	LHDT1	0.222	0.012	0.006
Lite-Heavy 10,001-14,000	LHDT2	0.222	0.01	0.006
Med-Heavy 14,001-33,000	MHDT	0.279	0.016	0.006
Heavy-Heavy 33,001-60,000	HHDT	0.701	0.134	0.019
Line Haul > 60,000 lbs	LHV	0.279	0.058	0.005
Urban Bus	UB	0	0.058	0.015
Motorcycle	MCY	0.206	0.167	0
School Bus	SBUS	0.279	0.1	0.017
Motorhome	MH	0.279	0.02	0.003

NOx EMISSION FACTORS (grams/mile)

Vehicle Type	EMFAC Type	Non-catalyst	Catalyst	Diesel
Light Auto	LDA	1.904	0.055	0.987
Light Truck < 3,750 lbs	LDT1	1.679	0.085	1.006
Light Truck 3,751-5,750	LDT2	1.854	0.127	0.994
Medium Truck 5,751-8,500	MDV	5.76	0.147	1.012
Lite-Heavy 8,501-10,000	LHDT1	1.318	0.18	1.54
Lite-Heavy 10,001-14,000	LHDT2	1.318	0.157	1.628
Med-Heavy 14,001-33,000	MHDT	1.978	0.305	1.87
Heavy-Heavy 33,001-60,000	HHDT	14.442	3.733	3.879
Line Haul > 60,000 lbs	LHV	1.978	1.491	1.407
Urban Bus	UB	0	2.185	6.698
Motorcycle	MCY	0.899	0.689	0
School Bus	SBUS	1.978	1.617	8.335
Motorhome	MH	1.978	0.323	3.196

CO2 EMISSIONS (grams)

Vehicle Type	Non-catalyst	Catalyst	Diesel
Light Auto	0.00	21,600,851.47	0.00
Light Truck < 3,750 lbs	0.00	5,778,727.04	84,943.07
Light Truck 3,751-5,750	0.00	12,862,615.49	0.00
Medium Truck 5,751-8,500	0.00	9,631,417.96	0.00
Lite-Heavy 8,501-10,000	0.00	1,196,000.24	1,415,087.08
Lite-Heavy 10,001-14,000	0.00	281,101.55	193,902.05
Med-Heavy 14,001-33,000	0.00	140,656.27	1,491,033.96
Heavy-Heavy 33,001-60,000	0.00	0.00	4,289,349.53
Line Haul > 60,000 lbs	0.00	0.00	186,379.25
Urban Bus	0.00	0.00	0.00
Motorcycle	260,962.63	514,388.88	0.00
School Bus	0.00	0.00	186,379.25
Motorhome	0.00	914,687.71	185,260.97
Total (grams)	260,962.63	52,920,446.61	8,032,335.16
Total (pounds)	575.32	116,669.61	17,708.27

Total CO2 Running Emissions (pounds): 134,953.21

METHANE EMISSIONS (grams)

Vehicle Type	Non-catalyst	Catalyst	Diesel
Light Auto	0.00	618.46	0.00
Light Truck < 3,750 lbs	0.00	180.22	0.74
Light Truck 3,751-5,750	0.00	501.18	0.00
Medium Truck 5,751-8,500	0.00	333.25	0.00
Lite-Heavy 8,501-10,000	0.00	25.27	3.71
Lite-Heavy 10,001-14,000	0.00	4.95	2.23
Med-Heavy 14,001-33,000	0.00	3.96	5.94
Heavy-Heavy 33,001-60,000	0.00	0.00	42.35
Line Haul > 60,000 lbs	0.00	0.00	0.62
Urban Bus	0.00	0.00	0.00
Motorcycle	433.28	558.73	0.00
School Bus	0.00	0.00	2.11
Motorhome	0.00	32.21	0.37
Total (grams)	433.28	2,258.24	58.07
Total (pounds)	0.96	4.98	0.13

Total Methane Running Emissions (pounds): 6.06

N2O EMISSIONS (grams)

Vehicle Type	Non-catalyst	Catalyst	Diesel
Light Auto	0.00	150.69	0.00
Light Truck < 3,750 lbs	0.00	49.77	12.02
Light Truck 3,751-5,750	0.00	163.25	0.00
Medium Truck 5,751-8,500	0.00	103.79	0.00
Lite-Heavy 8,501-10,000	0.00	18.47	46.41
Lite-Heavy 10,001-14,000	0.00	3.79	29.50
Med-Heavy 14,001-33,000	0.00	3.68	90.28
Heavy-Heavy 33,001-60,000	0.00	0.00	421.36
Line Haul > 60,000 lbs	0.00	0.00	8.49
Urban Bus	0.00	0.00	0.00
Motorcycle	92.14	112.33	0.00
School Bus	0.00	0.00	50.30
Motorhome	0.00	25.35	19.17
Total (grams)	92.14	631.12	677.54
Total (pounds)	0.20	1.39	1.49

Total N2O Running Emissions (pounds): 3.09

N_2O/NOx Ratio		
N_2O (mg km^{-1})	NOx (mg km^{-1})	N_2O/NOx Ratio
20	700	0.029
30	650	0.046
12	340	0.035
13	250	0.052
12	260	0.046
13	215	0.060
9	140	0.064
15	160	0.094
0.5	35	0.014
2	35	0.057
23	1300	0.018
22	800	0.028
40	1700	0.024
35	950	0.037
80	1700	0.047
120	1200	0.100
35	1400	0.025
43	1000	0.043
18	600	0.030
20	420	0.048
25	550	0.045
25	500	0.050
12	150	0.080
15	150	0.100
4	110	0.036
5	85	0.059
	Average	0.04873

Source: California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

Carbon Dioxide Calculation
Based on URBEMIS 2007 Assumptions and EMFAC 2007 Emission Factors

Minutes since engine shutoff	5	10	20	30	40	50	60	120	180	240	300	360	420	480	540	600	660	720	Total
Home-Work	0.7%	1.0%	1.4%	2.2%	2.6%	2.8%	2.2%	2.6%	6.2%	8.9%	8.6%	8.6%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%	100.0%
Home-Shop	3.3%	9.5%	14.4%	18.3%	12.2%	7.5%	4.2%	3.6%	3.7%	2.1%	2.6%	2.6%	2.6%	2.6%	2.7%	2.7%	2.7%	2.7%	100.0%
Home-Other	6.1%	7.6%	7.8%	7.2%	7.0%	7.9%	6.2%	6.6%	7.2%	4.9%	4.0%	4.0%	4.0%	3.9%	3.9%	3.9%	3.9%	3.9%	100.0%
Commercial Commute	2.6%	5.0%	3.7%	4.2%	4.7%	3.7%	3.0%	3.3%	8.5%	10.8%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.4%	100.0%
Commercial Non-Commute	5.8%	11.3%	7.3%	7.4%	7.7%	5.5%	4.4%	4.4%	12.1%	13.9%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.7%	100.0%
Commercial Customer	9.3%	14.7%	13.2%	14.0%	6.7%	7.1%	5.1%	4.5%	8.8%	6.4%	1.2%	1.2%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	100.0%

Trips	5	10	20	30	40	50	60	120	180	240	300	360	420	480	540	600	660	720	Total
Home-Work	11.07	15.81	22.13	34.78	41.11	44.27	34.78	41.11	98.02	140.71	135.96	135.96	137.54	137.54	137.54	137.54	137.54	137.54	1,580.96
Home-Shop	28.54	82.17	124.55	158.29	105.53	64.87	36.33	31.14	32.00	18.16	22.49	22.49	22.49	22.49	23.35	23.35	23.35	23.35	864.96
Home-Other	143.93	179.32	184.04	169.88	165.16	186.40	146.28	155.72	169.88	115.61	94.38	94.38	94.38	92.02	92.02	92.02	92.02	92.02	2,359.43
Commercial Commute	4.36	8.39	6.21	7.05	7.89	6.21	5.03	5.54	14.26	18.12	10.57	10.57	10.57	10.57	10.57	10.57	10.57	10.74	167.82
Commercial Non-Commute	4.87	9.48	6.13	6.21	6.46	4.62	3.69	3.69	10.15	11.66	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.27	83.91
Commercial Customer	756.95	1,196.47	1,074.38	1,139.50	545.33	577.89	415.10	366.27	716.26	520.91	97.67	97.67	105.81	105.81	105.81	105.81	105.81	105.81	8,139.27
Total	949.72	1,491.64	1,417.44	1,515.70	871.47	884.25	641.22	603.46	1,040.58	825.18	363.17	363.17	372.89	370.53	371.40	371.40	371.40	371.73	13,196.36

User Input from URBEMIS

Residential Trips	Home-Work %	Home-Shop %	Home-Other %
839.05	33%	18%	49%
3,966.31			

Commercial Trips	Commute	Non-Work	Customer
8,391.00	2.0%	1.0%	97.0%

Trip Distribution

Trips	Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
949.72	5	0	431.172	0	0	92.14165	1.880442	0	202.29	0	0	111.117	0	0	16.15091	4.742892	0	3.796023	2.852004	0
1491.64	10	0	677.2062	0	0	144.7193	2.953454	0	317.7201	0	0	174.5223	0	0	25.36689	7.449268	0	5.9621	4.479406	0
1417.44	20	0	643.5189	0	0	137.5203	2.806536	0	301.9153	0	0	165.8408	0	0	24.10503	7.078708	0	5.665518	4.25658	0
1515.70	30	0	688.1298	0	0	147.0536	3.001095	0	322.845	0	0	177.3374	0	0	25.77607	7.569428	0	6.058271	4.55166	0
871.47	40	0	395.6477	0	0	84.55009	1.725512	0	185.6233	0	0	101.9621	0	0	14.82023	4.352125	0	3.483268	2.617026	0
884.25	50	0	401.4481	0	0	85.78964	1.750809	0	188.3446	0	0	103.4569	0	0	15.0375	4.41593	0	3.534335	2.655394	0
641.22	60	0	291.1156	0	0	62.21154	1.269623	0	136.5807	0	0	75.0232	0	0	10.90465	3.202272	0	2.562972	1.925595	0
603.46	120	0	273.9724	0	0	58.54803	1.194858	0	128.5377	0	0	70.60523	0	0	10.2625	3.013697	0	2.412044	1.812201	0
1040.58	180	0	472.4215	0	0	100.9567	2.060341	0	221.6427	0	0	121.7474	0	0	17.69604	5.196637	0	4.159183	3.12485	0
825.18	240	0	374.6333	0	0	80.0593	1.633863	0	175.7641	0	0	96.54647	0	0	14.03307	4.120966	0	3.298258	2.478026	0
363.17	300	0	164.8796	0	0	35.23484	0.719078	0	77.35539	0	0	42.49099	0	0	6.176084	1.813675	0	1.451594	1.090602	0
363.17	360	0	164.8796	0	0	35.23484	0.719078	0	77.35539	0	0	42.49099	0	0	6.176084	1.813675	0	1.451594	1.090602	0
372.89	420	0	169.2926	0	0	36.17789	0.738324	0	79.4258	0	0	43.62826	0	0	6.341386	1.862218	0	1.490446	1.119792	0
370.53	480	0	168.2214	0	0	35.94898	0.733653	0	78.92324	0	0	43.3522	0	0	6.301261	1.850435	0	1.481015	1.112707	0
371.40	540	0	168.6141	0	0	36.0329	0.735365	0	79.10748	0	0	43.45341	0	0	6.315971	1.854755	0	1.484472	1.115304	0
371.40	600	0	168.6141	0	0	36.0329	0.735365	0	79.10748	0	0	43.45341	0	0	6.315971	1.854755	0	1.484472	1.115304	0
371.40	660	0	168.6141	0	0	36.0329	0.735365	0	79.10748	0	0	43.45341	0	0	6.315971	1.854755	0	1.484472	1.115304	0
371.73	720	0	168.7664	0	0	36.06546	0.73603	0	79.17897	0	0	43.49268	0	0	6.321679	1.856431	0	1.485814	1.116312	0
13196		0	5991	0	0	1280	26	0	2811	0	0	1544	0	0	224	66	0	53	40	0

Pollutant Name: Carbon Dioxide

Temperature: 60F
Relative Humidity: ALL

EMISSION FACTOR

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	111.902	11.771	0	115.109	14.676	0	115.069	14.861	0	156.919	20.156	0	170.667	24.152	0	170.667	23.821	0	170.667
10	121.432	13.38	0	124.911	16.749	0	124.868	16.95	0	170.282	23.044	0	185.2	28.094	0	185.2	27.889	0	185.2
20	139.927	17.07	0	143.936	21.476	0	143.887	21.72	0	196.218	29.618	0	213.408	36.902	0	213.408	36.924	0	213.408
30	157.671	21.388	0	162.189	26.982	0	162.133	27.278	0	221.1	37.257	0	240.47	46.943	0	240.47	47.159	0	240.47
40	174.663	26.334	0	179.668	33.265	0	179.606	33.624	0	244.928	45.959	0	266.386	58.217	0	266.386	58.595	0	266.386
50	190.904	31.908	0	196.374	40.325	0	196.307	40.758	0	267.702	55.726	0	291.155	70.724	0	291.155	71.231	0	291.155
60	206.393	38.111	0	212.306	48.164	0	212.234	48.681	0	289.422	66.557	0	314.778	84.463	0	314.778	85.066	0	314.778
120	279.289	87.417	0	287.292	109.943	0	287.194	111.197	0	391.644	151.599	0	425.955	188.589	0	425.955	188.596	0	425.955
180	279.509	99.401	0	287.518	125.082	0	287.42	126.499	0	391.952	172.516	0	426.29	215.096	0	426.29	215.279	0	426.29
240	279.728	111.326	0	287.743	140.133	0	287.645	141.714	0	392.259	193.301	0	426.625	241.329	0	426.625	241.649	0	426.625
300	279.948	123.192	0	287.969	155.094	0	287.871	156.841	0	392.567	213.955	0	426.96	267.288	0	426.96	267.704	0	426.96
360	280.167	135.001	0	288.195	169.968	0	288.097	171.881	0	392.875	234.477	0	427.294	292.973	0	427.295	293.447	0	427.294
420	280.387	146.751	0	288.421	184.752	0	288.322	186.833	0	393.183	254.867	0	427.629	318.385	0	427.629	318.875	0	427.629
480	280.606	158.444	0	288.647	199.448	0	288.548	201.698	0	393.49	275.126	0	427.964	343.522	0	427.964	343.99	0	427.964
540	280.826	170.078	0	288.872	214.056	0	288.774	216.475	0	393.798	295.253	0	428.299	368.385	0	428.299	368.792	0	428.299
600	281.045	181.653	0	289.098	228.575	0	288.999	231.165	0	394.106	315.248	0	428.633	392.975	0	428.633	393.28	0	428.633
660	281.265	193.171	0	289.324	243.005	0	289.225	245.767	0	394.414	335.111	0	428.968	417.29	0	428.968	417.454	0	428.968
720	281.484	204.63	0	289.55	257.347	0	289.451	260.282	0	394.722	354.843	0	429.303	441.332	0	429.303	441.315	0	429.303

Pollutant Name: Carbon Dioxide Emissions

EMISSIONS (GRAMS/DAY)

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	5075.326	0	0	1352.271	0	0	3006.231	0	0	2239.675	0	0	390.0767	0	0	90.42507	0	0
10	0	9061.019	0	0	2423.903	0	0	5385.356	0	0	4021.692	0	0	712.6574	0	0	166.277	0	0
20	0	10984.87	0	0	2953.385	0	0	6557.599	0	0	4911.872	0	0	889.5237	0	0	209.1936	0	0
30	0	14717.72	0	0	3967.801	0	0	8806.567	0	0	6607.06	0	0	1210.006	0	0	285.702	0	0
40	0	10418.99	0	0	2812.559	0	0	6241.396	0	0	4686.075	0	0	862.7894	0	0	204.1021	0	0
50	0	12809.41	0	0	3459.467	0	0	7676.55	0	0	5765.239	0	0	1063.512	0	0	251.7542	0	0
60	0	11094.71	0	0	2996.357	0	0	6648.885	0	0	4993.319	0	0	921.0398	0	0	218.0218	0	0
120	0	23949.85	0	0	6436.946	0	0	14293.01	0	0	10703.68	0	0	1935.395	0	0	454.9018	0	0
180	0	46959.17	0	0	12627.86	0	0	28037.58	0	0	21003.37	0	0	3806.347	0	0	895.3847	0	0
240	0	41706.43	0	0	11218.95	0	0	24908.23	0	0	18662.53	0	0	3386.587	0	0	797.0208	0	0
300	0	20311.84	0	0	5464.712	0	0	12132.5	0	0	9091.16	0	0	1650.793	0	0	388.5975	0	0
360	0	22258.91	0	0	5988.795	0	0	13295.92	0	0	9963.16	0	0	1809.426	0	0	425.9659	0	0
420	0	24843.85	0	0	6683.938	0	0	14839.36	0	0	11119.4	0	0	2019.002	0	0	475.2659	0	0
480	0	26653.67	0	0	7169.953	0	0	15918.66	0	0	11927.32	0	0	2164.622	0	0	509.4544	0	0
540	0	28677.54	0	0	7713.059	0	0	17124.79	0	0	12829.75	0	0	2326.709	0	0	547.4615	0	0
600	0	30629.25	0	0	8236.22	0	0	18286.88	0	0	13698.6	0	0	2482.019	0	0	583.8133	0	0
660	0	32571.35	0	0	8756.175	0	0	19442.01	0	0	14561.71	0	0	2635.592	0	0	619.6989	0	0
720	0	34534.68	0	0	9281.339	0	0	20608.86	0	0	15433.07	0	0	2789.959	0	0	655.7119	0	0
Total (grams/day):	0	407258.6	0	0	109543.7	0	0	243210.4	0	0	182218.7	0	0	33056.06	0	0	7778.752	0	0
Total (lbs/day):	0	897.8515	0	0	241.5025	0	0	536.1871	0	0	401.7235	0	0	72.87613	0	0	17.14921	0	0

Grand Total (lbs/day): 2289.9267

Pollutant Name: Methane

Temperature: 60F
Relative Humidity: ALL

EMISSION FACTOR

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0.127	0.001	0	0.103	0.001	0	0.107	0.002	0	0.425	0.002	0	0.459	0.006	0	0.459	0.006	0	0.688
10	0.126	0.002	0	0.102	0.003	0	0.106	0.003	0	0.421	0.004	0	0.455	0.013	0	0.455	0.012	0	0.682
20	0.127	0.004	0	0.103	0.005	0	0.107	0.007	0	0.425	0.009	0	0.459	0.024	0	0.459	0.023	0	0.689
30	0.133	0.006	0	0.108	0.007	0	0.112	0.009	0	0.444	0.012	0	0.48	0.035	0	0.48	0.033	0	0.72
40	0.143	0.007	0	0.116	0.009	0	0.121	0.012	0	0.478	0.016	0	0.517	0.045	0	0.517	0.042	0	0.775
50	0.158	0.009	0	0.128	0.011	0	0.133	0.014	0	0.528	0.019	0	0.57	0.054	0	0.57	0.051	0	0.855
60	0.165	0.01	0	0.133	0.013	0	0.138	0.016	0	0.548	0.022	0	0.593	0.062	0	0.593	0.058	0	0.889
120	0.132	0.014	0	0.107	0.017	0	0.111	0.023	0	0.441	0.031	0	0.476	0.083	0	0.476	0.079	0	0.714
180	0.144	0.011	0	0.117	0.014	0	0.121	0.018	0	0.48	0.025	0	0.518	0.077	0	0.518	0.073	0	0.777
240	0.156	0.012	0	0.126	0.015	0	0.131	0.019	0	0.519	0.026	0	0.56	0.081	0	0.56	0.077	0	0.841
300	0.167	0.012	0	0.136	0.015	0	0.141	0.02	0	0.558	0.028	0	0.603	0.086	0	0.603	0.082	0	0.904
360	0.179	0.013	0	0.145	0.016	0	0.151	0.021	0	0.597	0.029	0	0.645	0.091	0	0.645	0.086	0	0.967
420	0.191	0.014	0	0.155	0.017	0	0.161	0.023	0	0.636	0.03	0	0.687	0.095	0	0.687	0.09	0	1.03
480	0.202	0.014	0	0.164	0.018	0	0.17	0.024	0	0.675	0.032	0	0.729	0.1	0	0.729	0.095	0	1.094
540	0.214	0.015	0	0.174	0.018	0	0.18	0.025	0	0.714	0.033	0	0.771	0.104	0	0.771	0.099	0	1.157
600	0.226	0.015	0	0.183	0.019	0	0.19	0.026	0	0.753	0.035	0	0.813	0.108	0	0.813	0.103	0	1.22
660	0.238	0.016	0	0.193	0.02	0	0.2	0.027	0	0.792	0.036	0	0.855	0.113	0	0.855	0.107	0	1.283
720	0.249	0.017	0	0.202	0.021	0	0.21	0.028	0	0.831	0.037	0	0.898	0.117	0	0.898	0.111	0	1.346

Pollutant Name: Methane Emissions

EMISSIONS (GRAMS/DAY)

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	0.431172	0	0	0.092142	0	0	0.40458	0	0	0.222234	0	0	0.096905	0	0	0.022776	0	0
10	0	1.354412	0	0	0.434158	0	0	0.95316	0	0	0.698089	0	0	0.32977	0	0	0.071545	0	0
20	0	2.574076	0	0	0.687601	0	0	2.113407	0	0	1.492567	0	0	0.578521	0	0	0.130307	0	0
30	0	4.128779	0	0	1.029376	0	0	2.905605	0	0	2.128049	0	0	0.902162	0	0	0.199923	0	0
40	0	2.769534	0	0	0.760951	0	0	2.227479	0	0	1.631393	0	0	0.66691	0	0	0.146297	0	0
50	0	3.613033	0	0	0.943686	0	0	2.636825	0	0	1.965681	0	0	0.812025	0	0	0.180251	0	0
60	0	2.911156	0	0	0.80875	0	0	2.185291	0	0	1.65051	0	0	0.676089	0	0	0.148652	0	0
120	0	3.835614	0	0	0.995317	0	0	2.956368	0	0	2.188762	0	0	0.851788	0	0	0.190551	0	0
180	0	5.196637	0	0	1.413394	0	0	3.989569	0	0	3.043685	0	0	1.362595	0	0	0.30362	0	0
240	0	4.4956	0	0	1.20089	0	0	3.339518	0	0	2.510208	0	0	1.136679	0	0	0.253966	0	0
300	0	1.978555	0	0	0.528523	0	0	1.547108	0	0	1.189748	0	0	0.531143	0	0	0.119031	0	0
360	0	2.143434	0	0	0.563757	0	0	1.624463	0	0	1.232239	0	0	0.562024	0	0	0.124837	0	0
420	0	2.370096	0	0	0.615024	0	0	1.826793	0	0	1.308848	0	0	0.602432	0	0	0.13414	0	0
480	0	2.355099	0	0	0.647082	0	0	1.894158	0	0	1.387271	0	0	0.630126	0	0	0.140696	0	0
540	0	2.529211	0	0	0.648592	0	0	1.977687	0	0	1.433962	0	0	0.656861	0	0	0.146963	0	0
600	0	2.529211	0	0	0.684625	0	0	2.056795	0	0	1.520869	0	0	0.682125	0	0	0.152901	0	0
660	0	2.697825	0	0	0.720658	0	0	2.135902	0	0	1.564323	0	0	0.713705	0	0	0.158839	0	0
720	0	2.86903	0	0	0.757375	0	0	2.217011	0	0	1.609229	0	0	0.739636	0	0	0.164925	0	0
Total (grams/day):	0	50.78247	0	0	13.5319	0	0	38.99172	0	0	28.77767	0	0	12.5315	0	0	2.790221	0	0
Total (lbs/day):	0	0.111956	0	0	0.029833	0	0	0.085962	0	0	0.063444	0	0	0.027627	0	0	0.006151	0	0

Grand Total (lbs/day): 0.5317326

Pollutant Name: Oxides of Nitrogen

Temperature: 60F
Humidity: ALL

EMISSION FACTOR

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0.745	0.092	0	0.673	0.121	0	0.746	0.217	0	2.327	0.264	0	0.533	1.397	0	0.533	1.352	0	0.8
10	0.809	0.101	0	0.731	0.133	0	0.81	0.237	0	2.529	0.287	0	0.58	1.515	0	0.58	1.479	0	0.869
20	0.927	0.117	0	0.838	0.155	0	0.928	0.273	0	2.897	0.329	0	0.664	1.726	0	0.664	1.706	0	0.996
30	1.029	0.131	0	0.93	0.173	0	1.031	0.304	0	3.216	0.365	0	0.737	1.904	0	0.737	1.896	0	1.105
40	1.115	0.142	0	1.008	0.188	0	1.117	0.328	0	3.486	0.393	0	0.799	2.049	0	0.799	2.05	0	1.198
50	1.186	0.151	0	1.072	0.199	0	1.188	0.347	0	3.706	0.415	0	0.849	2.161	0	0.849	2.168	0	1.274
60	1.241	0.157	0	1.122	0.206	0	1.243	0.36	0	3.878	0.431	0	0.889	2.239	0	0.889	2.249	0	1.333
120	1.27	0.167	0	1.148	0.221	0	1.272	0.386	0	3.969	0.463	0	0.91	2.41	0	0.91	2.413	0	1.364
180	1.24	0.173	0	1.121	0.228	0	1.241	0.4	0	3.874	0.479	0	0.888	2.421	0	0.888	2.423	0	1.332
240	1.2	0.172	0	1.084	0.227	0	1.201	0.397	0	3.749	0.476	0	0.859	2.404	0	0.859	2.405	0	1.289
300	1.15	0.17	0	1.039	0.224	0	1.151	0.392	0	3.592	0.47	0	0.823	2.375	0	0.823	2.378	0	1.235
360	1.09	0.167	0	0.985	0.221	0	1.091	0.386	0	3.405	0.462	0	0.78	2.336	0	0.78	2.34	0	1.171
420	1.02	0.164	0	0.922	0.216	0	1.022	0.378	0	3.188	0.453	0	0.731	2.287	0	0.731	2.291	0	1.096
480	0.941	0.16	0	0.85	0.211	0	0.942	0.369	0	2.939	0.441	0	0.674	2.227	0	0.674	2.233	0	1.01
540	0.851	0.155	0	0.77	0.204	0	0.853	0.357	0	2.661	0.427	0	0.61	2.156	0	0.61	2.164	0	0.915
600	0.752	0.15	0	0.68	0.197	0	0.753	0.344	0	2.351	0.411	0	0.539	2.075	0	0.539	2.085	0	0.808
660	0.643	0.143	0	0.581	0.189	0	0.644	0.329	0	2.01	0.393	0	0.461	1.983	0	0.461	1.995	0	0.691
720	0.525	0.136	0	0.474	0.18	0	0.525	0.313	0	1.639	0.373	0	0.376	1.881	0	0.376	1.896	0	0.564

Pollutant Name: Nitrous Oxide

EMISSIONS (GRAMS/DAY)

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	1.933022	0	0	0.5433	0	0	2.139107	0	0	1.429496	0	0	1.099491	0	0	0.250094	0	0
10	0	3.333042	0	0	0.937943	0	0	3.66937	0	0	2.440795	0	0	1.872744	0	0	0.429701	0	0
20	0	3.668983	0	0	1.038716	0	0	4.016485	0	0	2.6588	0	0	2.027435	0	0	0.470996	0	0
30	0	4.392787	0	0	1.239711	0	0	4.782623	0	0	3.154218	0	0	2.391565	0	0	0.559739	0	0
40	0	2.737761	0	0	0.774587	0	0	2.966912	0	0	1.952674	0	0	1.479774	0	0	0.347968	0	0
50	0	2.953962	0	0	0.831929	0	0	3.184793	0	0	2.092214	0	0	1.58354	0	0	0.373392	0	0
60	0	2.227223	0	0	0.624506	0	0	2.396019	0	0	1.575692	0	0	1.189774	0	0	0.280887	0	0
120	0	2.229574	0	0	0.630526	0	0	2.417778	0	0	1.593002	0	0	1.205227	0	0	0.283623	0	0
180	0	3.98267	0	0	1.121679	0	0	4.32028	0	0	2.841801	0	0	2.087706	0	0	0.491089	0	0
240	0	3.140027	0	0	0.885597	0	0	3.400315	0	0	2.239452	0	0	1.643939	0	0	0.386543	0	0
300	0	1.365885	0	0	0.384608	0	0	1.477662	0	0	0.97318	0	0	0.714785	0	0	0.168211	0	0
360	0	1.341782	0	0	0.379457	0	0	1.455045	0	0	0.956615	0	0	0.703047	0	0	0.165523	0	0
420	0	1.352945	0	0	0.380799	0	0	1.463026	0	0	0.963085	0	0	0.706722	0	0	0.166395	0	0
480	0	1.311595	0	0	0.36963	0	0	1.419155	0	0	0.93164	0	0	0.683827	0	0	0.161156	0	0
540	0	1.273573	0	0	0.358202	0	0	1.376209	0	0	0.90417	0	0	0.663571	0	0	0.156541	0	0
600	0	1.23249	0	0	0.345911	0	0	1.326095	0	0	0.87029	0	0	0.638641	0	0	0.150826	0	0
660	0	1.174974	0	0	0.331864	0	0	1.268271	0	0	0.832175	0	0	0.610325	0	0	0.144316	0	0
720	0	1.118468	0	0	0.316346	0	0	1.207682	0	0	0.790539	0	0	0.579455	0	0	0.137278	0	0
Total (grams/day):	0	40.77076	0	0	11.49531	0	0	44.28683	0	0	29.19984	0	0	21.88157	0	0	5.124279	0	0
Total (lbs/day):	0	0.089884	0	0	0.025343	0	0	0.097636	0	0	0.064375	0	0	0.048241	0	0	0.011297	0	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
1.899436	7.597745	0	0	17.09493	0	0	0.949718	0	0	0	16.13001	25.65758	0	0	0	0.949718	0	12.35203	0.94402
2.983287	11.93315	0	0	26.84959	0	0	1.491644	0	0	0	25.33408	40.29824	0	0	0	1.491644	0	19.40032	1.482694
2.834885	11.33954	0	0	25.51397	0	0	1.417443	0	0	0	24.07384	38.29363	0	0	0	1.417443	0	18.43526	1.408938
3.031409	12.12564	0	0	27.28268	0	0	1.515704	0	0	0	25.74272	40.94827	0	0	0	1.515704	0	19.71325	1.50661
1.742941	6.971765	0	0	15.68647	0	0	0.871471	0	0	0	14.80106	23.54365	0	0	0	0.871471	0	11.33435	0.866242
1.768494	7.073976	0	0	15.91645	0	0	0.884247	0	0	0	15.01805	23.88882	0	0	0	0.884247	0	11.50052	0.878942
1.282448	5.129791	0	0	11.54203	0	0	0.641224	0	0	0	10.89055	17.3233	0	0	0	0.641224	0	8.339758	0.637377
1.206927	4.827708	0	0	10.86234	0	0	0.603464	0	0	0	10.24922	16.30317	0	0	0	0.603464	0	7.848647	0.599843
2.081152	8.324609	0	0	18.73037	0	0	1.040576	0	0	0	17.67314	28.1122	0	0	0	1.040576	0	13.53373	1.034333
1.650367	6.601468	0	0	14.8533	0	0	0.825183	0	0	0	14.01492	22.29316	0	0	0	0.825183	0	10.73234	0.820232
0.726342	2.905367	0	0	6.537075	0	0	0.363171	0	0	0	6.168094	9.811424	0	0	0	0.363171	0	4.7234	0.360992
0.726342	2.905367	0	0	6.537075	0	0	0.363171	0	0	0	6.168094	9.811424	0	0	0	0.363171	0	4.7234	0.360992
0.745782	2.983129	0	0	6.71204	0	0	0.372891	0	0	0	6.333182	10.07403	0	0	0	0.372891	0	4.849822	0.370654
0.741063	2.964253	0	0	6.66957	0	0	0.370532	0	0	0	6.29311	10.01028	0	0	0	0.370532	0	4.819135	0.368308
0.742793	2.971173	0	0	6.685139	0	0	0.371397	0	0	0	6.3078	10.03365	0	0	0	0.371397	0	4.830385	0.369168
0.742793	2.971173	0	0	6.685139	0	0	0.371397	0	0	0	6.3078	10.03365	0	0	0	0.371397	0	4.830385	0.369168
0.742793	2.971173	0	0	6.685139	0	0	0.371397	0	0	0	6.3078	10.03365	0	0	0	0.371397	0	4.830385	0.369168
0.743465	2.973858	0	0	6.691181	0	0	0.371732	0	0	0	6.313501	10.04272	0	0	0	0.371732	0	4.83475	0.369502
26	106	0	0	238	0	0	13	0	0	0	224	357	0	0	0	13	0	172	13

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MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
9.546	0	170.667	9.546	0	170.667	9.546	0	0	9.546	0	35.73	1.771	0	170.667	9.546	0	170.667	9.546	0
19.039	0	185.2	19.039	0	185.2	19.039	0	0	19.039	0	38.773	3.533	0	185.2	19.039	0	185.2	19.039	0
37.866	0	213.408	37.866	0	213.408	37.866	0	0	37.866	0	44.678	7.026	0	213.408	37.866	0	213.408	37.866	0
56.482	0	240.47	56.482	0	240.47	56.482	0	0	56.482	0	50.344	10.481	0	240.47	56.482	0	240.47	56.482	0
74.887	0	266.386	74.887	0	266.386	74.887	0	0	74.887	0	55.769	13.896	0	266.386	74.887	0	266.386	74.887	0
93.081	0	291.155	93.081	0	291.155	93.081	0	0	93.081	0	60.955	17.272	0	291.155	93.081	0	291.155	93.081	0
111.063	0	314.778	111.063	0	314.778	111.063	0	0	111.063	0	65.901	20.609	0	314.778	111.063	0	314.778	111.063	0
188.899	0	425.955	188.899	0	425.955	188.899	0	0	188.899	0	89.176	35.052	0	425.955	188.899	0	425.955	188.899	0
223.17	0	426.29	223.17	0	426.29	223.17	0	0	223.17	0	89.247	41.411	0	426.29	223.17	0	426.29	223.17	0
255.419	0	426.625	255.419	0	426.625	255.419	0	0	255.419	0	89.317	47.395	0	426.625	255.419	0	426.625	255.419	0
285.644	0	426.96	285.644	0	426.96	285.644	0	0	285.644	0	89.387	53.004	0	426.96	285.644	0	426.96	285.644	0
313.847	0	427.294	313.847	0	427.294	313.847	0	0	313.847	0	89.457	58.237	0	427.294	313.847	0	427.294	313.847	0
340.027	0	427.629	340.027	0	427.629	340.027	0	0	340.027	0	89.527	63.095	0	427.629	340.027	0	427.629	340.027	0
364.184	0	427.964	364.184	0	427.964	364.184	0	0	364.184	0	89.597	67.577	0	427.964	364.184	0	427.964	364.184	0
386.319	0	428.299	386.318	0	428.299	386.319	0	0	386.319	0	89.667	71.685	0	428.299	386.318	0	428.299	386.319	0
406.43	0	428.633	406.43	0	428.633	406.43	0	0	406.43	0	89.737	75.417	0	428.633	406.43	0	428.633	406.43	0
424.519	0	428.968	424.519	0	428.968	424.519	0	0	424.519	0	89.807	78.773	0	428.968	424.519	0	428.968	424.519	0
440.586	0	429.303	440.585	0	429.303	440.585	0	0	440.586	0	89.877	81.754	0	429.303	440.585	0	429.303	440.586	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
18.13202	0	0	0	0	0	0	0	0	0	0	576.3254	45.43958	0	0	0	0	0	117.9125	0
56.79881	0	0	0	0	0	0	0	0	0	0	982.2781	142.3737	0	0	0	0	0	369.3626	0
107.3458	0	0	0	0	0	0	0	0	0	0	1075.571	269.051	0	0	0	0	0	698.0695	0
171.22	0	0	0	0	0	0	0	0	0	0	1295.992	429.1788	0	0	0	0	0	1113.444	0
130.5236	0	0	0	0	0	0	0	0	0	0	825.4402	327.1626	0	0	0	0	0	848.7953	0
164.6132	0	0	0	0	0	0	0	0	0	0	915.4253	412.6076	0	0	0	0	0	1070.48	0
142.4325	0	0	0	0	0	0	0	0	0	0	717.6979	357.016	0	0	0	0	0	926.2385	0
227.9873	0	0	0	0	0	0	0	0	0	0	913.9848	571.4587	0	0	0	0	0	1482.602	0
464.4507	0	0	0	0	0	0	0	0	0	0	1577.275	1164.154	0	0	0	0	0	3020.323	0
421.5351	0	0	0	0	0	0	0	0	0	0	1251.77	1056.584	0	0	0	0	0	2741.243	0
207.4752	0	0	0	0	0	0	0	0	0	0	551.3474	520.0447	0	0	0	0	0	1349.211	0
227.9602	0	0	0	0	0	0	0	0	0	0	551.7792	571.3879	0	0	0	0	0	1482.425	0
253.5861	0	0	0	0	0	0	0	0	0	0	566.9908	635.6207	0	0	0	0	0	1649.07	0
269.8834	0	0	0	0	0	0	0	0	0	0	563.8438	676.4649	0	0	0	0	0	1755.052	0
286.9551	0	0	0	0	0	0	0	0	0	0	565.6015	719.2623	0	0	0	0	0	1866.069	0
301.8935	0	0	0	0	0	0	0	0	0	0	566.0431	756.7079	0	0	0	0	0	1963.213	0
315.3298	0	0	0	0	0	0	0	0	0	0	566.4846	790.3808	0	0	0	0	0	2050.59	0
327.5601	0	0	0	0	0	0	0	0	0	0	567.4385	821.0324	0	0	0	0	0	2130.123	0
4095.682	0	0	0	0	0	0	0	0	0	0	14631.29	10265.93	0	0	0	0	0	26634.22	0
9.029434	0	0	0	0	0	0	0	0	0	0	32.25647	22.6325	0	0	0	0	0	58.71841	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.014	0	1.408	0.061	0	0.688	0.028	0	0	0.038	0	0.138	0.018	0	0.688	0.032	0	0.688	0.011	0
0.028	0	1.396	0.118	0	0.682	0.056	0	0	0.075	0	0.137	0.035	0	0.682	0.062	0	0.682	0.021	0
0.053	0	1.409	0.224	0	0.689	0.105	0	0	0.142	0	0.139	0.065	0	0.689	0.118	0	0.689	0.039	0
0.075	0	1.472	0.317	0	0.72	0.149	0	0	0.201	0	0.145	0.093	0	0.72	0.167	0	0.72	0.055	0
0.094	0	1.585	0.398	0	0.775	0.187	0	0	0.253	0	0.156	0.117	0	0.775	0.21	0	0.775	0.069	0
0.11	0	1.749	0.467	0	0.855	0.22	0	0	0.296	0	0.172	0.137	0	0.855	0.246	0	0.855	0.081	0
0.123	0	1.818	0.524	0	0.889	0.246	0	0	0.332	0	0.179	0.153	0	0.889	0.276	0	0.889	0.091	0
0.114	0	1.461	0.471	0	0.714	0.23	0	0	0.313	0	0.144	0.17	0	0.714	0.237	0	0.714	0.081	0
0.12	0	1.59	0.5	0	0.777	0.244	0	0	0.332	0	0.156	0.144	0	0.777	0.252	0	0.777	0.086	0
0.127	0	1.719	0.528	0	0.841	0.258	0	0	0.35	0	0.169	0.153	0	0.841	0.266	0	0.841	0.091	0
0.134	0	1.849	0.555	0	0.904	0.271	0	0	0.368	0	0.182	0.16	0	0.904	0.279	0	0.904	0.096	0
0.14	0	1.978	0.581	0	0.967	0.283	0	0	0.386	0	0.194	0.168	0	0.967	0.292	0	0.967	0.1	0
0.146	0	2.108	0.606	0	1.03	0.296	0	0	0.402	0	0.207	0.175	0	1.03	0.305	0	1.03	0.105	0
0.152	0	2.237	0.63	0	1.094	0.308	0	0	0.418	0	0.22	0.182	0	1.094	0.317	0	1.094	0.109	0
0.157	0	2.366	0.654	0	1.157	0.319	0	0	0.434	0	0.233	0.189	0	1.157	0.329	0	1.157	0.113	0
0.163	0	2.496	0.676	0	1.22	0.33	0	0	0.449	0	0.245	0.195	0	1.22	0.34	0	1.22	0.117	0
0.168	0	2.625	0.697	0	1.283	0.34	0	0	0.463	0	0.258	0.202	0	1.283	0.351	0	1.283	0.12	0
0.173	0	2.754	0.718	0	1.346	0.35	0	0	0.477	0	0.271	0.207	0	1.346	0.361	0	1.346	0.124	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.026592	0	0	0	0	0	0	0	0	0	0	2.225942	0.461837	0	0	0	0	0	0.135872	0
0.083532	0	0	0	0	0	0	0	0	0	0	3.470768	1.410439	0	0	0	0	0	0.407407	0
0.150249	0	0	0	0	0	0	0	0	0	0	3.346264	2.489086	0	0	0	0	0	0.718975	0
0.227356	0	0	0	0	0	0	0	0	0	0	3.732695	3.808189	0	0	0	0	0	1.084229	0
0.163836	0	0	0	0	0	0	0	0	0	0	2.308965	2.754607	0	0	0	0	0	0.78207	0
0.194534	0	0	0	0	0	0	0	0	0	0	2.583105	3.272768	0	0	0	0	0	0.931542	0
0.157741	0	0	0	0	0	0	0	0	0	0	1.949408	2.650466	0	0	0	0	0	0.758918	0
0.13759	0	0	0	0	0	0	0	0	0	0	1.475888	2.771539	0	0	0	0	0	0.63574	0
0.249738	0	0	0	0	0	0	0	0	0	0	2.757011	4.048157	0	0	0	0	0	1.163901	0
0.209597	0	0	0	0	0	0	0	0	0	0	2.368521	3.410853	0	0	0	0	0	0.976643	0
0.09733	0	0	0	0	0	0	0	0	0	0	1.122593	1.569828	0	0	0	0	0	0.453446	0
0.101688	0	0	0	0	0	0	0	0	0	0	1.19661	1.648319	0	0	0	0	0	0.47234	0
0.108884	0	0	0	0	0	0	0	0	0	0	1.310969	1.762955	0	0	0	0	0	0.509231	0
0.112642	0	0	0	0	0	0	0	0	0	0	1.384484	1.821872	0	0	0	0	0	0.525286	0
0.116619	0	0	0	0	0	0	0	0	0	0	1.469717	1.89636	0	0	0	0	0	0.545833	0
0.121075	0	0	0	0	0	0	0	0	0	0	1.545411	1.956562	0	0	0	0	0	0.565155	0
0.124789	0	0	0	0	0	0	0	0	0	0	1.627412	2.026798	0	0	0	0	0	0.579646	0
0.128619	0	0	0	0	0	0	0	0	0	0	1.710959	2.078843	0	0	0	0	0	0.599509	0
2.512411	0	0	0	0	0	0	0	0	0	0	37.58672	41.83948	0	0	0	0	0	11.84574	0
0.005539	0	0	0	0	0	0	0	0	0	0	0.082865	0.09224	0	0	0	0	0	0.026115	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.763	0	3.939	3.301	0	0.8	1.76	0	0	2.545	0	0.294	0.097	0	0.8	1.417	0	0.8	0.545	0
1.149	0	4.282	4.974	0	0.869	2.652	0	0	3.835	0	0.32	0.147	0	0.869	2.136	0	0.869	0.82	0
1.828	0	4.905	7.912	0	0.996	4.218	0	0	6.099	0	0.367	0.233	0	0.996	3.397	0	0.996	1.305	0
2.381	0	5.445	10.306	0	1.105	5.494	0	0	7.945	0	0.407	0.304	0	1.105	4.425	0	1.105	1.7	0
2.809	0	5.902	12.156	0	1.198	6.48	0	0	9.371	0	0.441	0.358	0	1.198	5.219	0	1.198	2.005	0
3.11	0	6.275	13.462	0	1.274	7.176	0	0	10.378	0	0.469	0.397	0	1.274	5.78	0	1.274	2.22	0
3.286	0	6.565	14.224	0	1.333	7.583	0	0	10.965	0	0.491	0.419	0	1.333	6.107	0	1.333	2.346	0
3.336	0	6.72	14.438	0	1.364	7.696	0	0	11.129	0	0.502	0.421	0	1.364	6.2	0	1.364	2.382	0
3.324	0	6.559	14.385	0	1.332	7.668	0	0	11.089	0	0.49	0.424	0	1.332	6.177	0	1.332	2.373	0
3.305	0	6.347	14.304	0	1.289	7.625	0	0	11.026	0	0.474	0.422	0	1.289	6.143	0	1.289	2.359	0
3.28	0	6.082	14.195	0	1.235	7.567	0	0	10.942	0	0.455	0.418	0	1.235	6.096	0	1.235	2.341	0
3.248	0	5.766	14.057	0	1.171	7.494	0	0	10.836	0	0.431	0.414	0	1.171	6.037	0	1.171	2.319	0
3.21	0	5.397	13.892	0	1.096	7.406	0	0	10.709	0	0.403	0.41	0	1.096	5.966	0	1.096	2.292	0
3.165	0	4.977	13.699	0	1.01	7.303	0	0	10.56	0	0.372	0.404	0	1.01	5.883	0	1.01	2.26	0
3.114	0	4.504	13.478	0	0.915	7.185	0	0	10.39	0	0.337	0.397	0	0.915	5.788	0	0.915	2.223	0
3.057	0	3.98	13.229	0	0.808	7.052	0	0	10.198	0	0.298	0.39	0	0.808	5.681	0	0.808	2.182	0
2.993	0	3.404	12.952	0	0.691	6.904	0	0	9.984	0	0.254	0.382	0	0.691	5.562	0	0.691	2.136	0
2.922	0	2.776	12.647	0	0.564	6.742	0	0	9.749	0	0.207	0.373	0	0.564	5.431	0	0.564	2.086	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.070623	0	0	0	0	0	0	0	0	0	0	0.23109	0.121279	0	0	0	0	0	0.328045	0
0.167037	0	0	0	0	0	0	0	0	0	0	0.395051	0.28867	0	0	0	0	0	0.775213	0
0.252528	0	0	0	0	0	0	0	0	0	0	0.430537	0.434791	0	0	0	0	0	1.172352	0
0.351724	0	0	0	0	0	0	0	0	0	0	0.510561	0.606607	0	0	0	0	0	1.633073	0
0.238579	0	0	0	0	0	0	0	0	0	0	0.318075	0.410729	0	0	0	0	0	1.107412	0
0.268017	0	0	0	0	0	0	0	0	0	0	0.34323	0.462151	0	0	0	0	0	1.244139	0
0.205355	0	0	0	0	0	0	0	0	0	0	0.260573	0.353707	0	0	0	0	0	0.953411	0
0.196203	0	0	0	0	0	0	0	0	0	0	0.250722	0.334467	0	0	0	0	0	0.911035	0
0.337104	0	0	0	0	0	0	0	0	0	0	0.421996	0.580844	0	0	0	0	0	1.564998	0
0.265797	0	0	0	0	0	0	0	0	0	0	0.323718	0.45844	0	0	0	0	0	1.233732	0
0.116095	0	0	0	0	0	0	0	0	0	0	0.136761	0.199851	0	0	0	0	0	0.538834	0
0.114962	0	0	0	0	0	0	0	0	0	0	0.129547	0.197939	0	0	0	0	0	0.53377	0
0.116658	0	0	0	0	0	0	0	0	0	0	0.124373	0.201273	0	0	0	0	0	0.541675	0
0.114295	0	0	0	0	0	0	0	0	0	0	0.114079	0.197073	0	0	0	0	0	0.530733	0
0.112716	0	0	0	0	0	0	0	0	0	0	0.103587	0.19411	0	0	0	0	0	0.523263	0
0.110653	0	0	0	0	0	0	0	0	0	0	0.091599	0.190687	0	0	0	0	0	0.513612	0
0.108336	0	0	0	0	0	0	0	0	0	0	0.078075	0.186776	0	0	0	0	0	0.502784	0
0.105862	0	0	0	0	0	0	0	0	0	0	0.063685	0.18254	0	0	0	0	0	0.491458	0
3.252546	0	0	0	0	0	0	0	0	0	0	4.327259	5.601934	0	0	0	0	0	15.09954	0
0.007171	0	0	0	0	0	0	0	0	0	0	0.00954	0.01235	0	0	0	0	0	0.033289	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 70%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4776.899	4776.899
5	1313.986	932.385	353.976	932.235	1351.682	1173.667	346.419	1161.808	1351.298	1189.513	348.474	1189.182	1842.542	1621.014	346.411	1619.613	2513.51	2513.51
10	992.919	704.56	353.976	704.472	1021.404	886.887	346.419	879.143	1021.114	898.861	348.474	898.645	1392.325	1224.926	346.411	1223.972	1672.267	1672.267
15	778.741	552.583	353.976	552.535	801.082	695.58	346.419	690.581	800.854	704.971	348.474	704.833	1091.992	960.703	346.411	960.046	1175.484	1175.485
20	633.91	449.813	353.976	449.794	652.096	566.216	346.419	563.073	651.911	573.86	348.474	573.775	888.903	782.031	346.411	781.575	873	873
25	535.572	380.034	353.976	380.033	550.937	478.379	346.419	476.497	550.781	484.838	348.474	484.788	751.009	660.715	346.411	660.397	685.012	685.012
30	469.639	333.249	353.976	333.261	483.113	419.487	346.419	418.45	482.975	425.151	348.474	425.124	658.554	579.376	346.411	579.149	567.895	567.895
35	427.432	303.299	353.976	303.319	439.694	381.787	346.419	381.29	439.569	386.941	348.474	386.93	599.368	527.306	346.411	527.138	497.421	497.421
40	403.761	286.503	353.976	286.527	415.344	360.644	346.419	360.451	415.226	365.513	348.474	365.51	566.176	498.104	346.411	497.969	460.326	460.326
45	395.857	280.894	353.976	280.92	407.213	353.584	346.419	353.492	407.097	358.357	348.474	358.357	555.092	488.353	346.411	488.229	450.085	450.085
50	402.817	285.833	353.976	285.857	414.373	359.8	346.419	359.619	414.255	364.658	348.474	364.656	564.851	496.939	346.411	496.806	464.953	464.953
55	425.434	301.882	353.976	301.902	437.639	380.003	346.419	379.532	437.515	385.133	348.474	385.122	596.567	524.842	346.411	524.677	507.469	507.469
60	466.351	330.916	353.976	330.928	479.73	416.55	346.419	415.555	479.594	422.174	348.474	422.149	653.943	575.32	346.411	575.097	585.19	585.19
65	530.579	376.491	353.976	376.491	545.8	473.919	346.419	472.101	545.645	480.317	348.474	480.269	744.006	654.555	346.411	654.243	712.968	712.968

Pollutant Name: Methane Temperature: 60F Relative Humidity: 70%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.888	0.93
5	0.522	0.036	0.016	0.036	0.47	0.043	0.009	0.042	0.474	0.059	0.012	0.059	1.33	0.066	0.008	0.067	0.823	0.047
10	0.404	0.027	0.012	0.027	0.366	0.032	0.007	0.032	0.369	0.045	0.009	0.045	0.98	0.051	0.006	0.052	0.577	0.033
15	0.329	0.02	0.01	0.02	0.3	0.024	0.006	0.024	0.303	0.033	0.007	0.033	0.758	0.039	0.005	0.04	0.429	0.024
20	0.28	0.015	0.008	0.015	0.258	0.02	0.005	0.019	0.26	0.026	0.006	0.026	0.616	0.031	0.004	0.031	0.337	0.018
25	0.248	0.012	0.007	0.012	0.23	0.016	0.004	0.016	0.231	0.021	0.005	0.021	0.523	0.025	0.004	0.025	0.278	0.014
30	0.228	0.01	0.006	0.01	0.211	0.013	0.003	0.013	0.213	0.017	0.004	0.017	0.462	0.021	0.003	0.021	0.239	0.012
35	0.214	0.009	0.005	0.009	0.2	0.012	0.003	0.012	0.201	0.015	0.004	0.015	0.425	0.019	0.003	0.019	0.213	0.01
40	0.207	0.008	0.005	0.008	0.193	0.011	0.003	0.011	0.195	0.014	0.003	0.014	0.404	0.017	0.002	0.017	0.196	0.009
45	0.205	0.008	0.004	0.008	0.191	0.01	0.002	0.01	0.193	0.013	0.003	0.013	0.398	0.016	0.002	0.016	0.184	0.008
50	0.208	0.007	0.004	0.007	0.193	0.01	0.002	0.01	0.195	0.013	0.003	0.013	0.405	0.016	0.002	0.016	0.177	0.007
55	0.215	0.008	0.004	0.008	0.2	0.01	0.002	0.01	0.202	0.013	0.003	0.013	0.426	0.017	0.002	0.017	0.173	0.007
60	0.228	0.008	0.004	0.008	0.212	0.011	0.002	0.011	0.213	0.014	0.003	0.014	0.465	0.018	0.002	0.018	0.173	0.007
65	0.249	0.01	0.004	0.01	0.231	0.012	0.002	0.012	0.232	0.016	0.003	0.016	0.526	0.02	0.002	0.02	0.175	0.007

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 70%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.288	1.373
5	2.034	0.128	2.042	0.129	1.845	0.204	2.082	0.232	2.038	0.304	2.057	0.304	6.338	0.35	2.095	0.357	1.509	0.202
10	2.139	0.111	1.694	0.112	1.94	0.175	1.727	0.198	2.143	0.261	1.706	0.262	6.665	0.301	1.738	0.308	1.586	0.212
15	2.246	0.098	1.456	0.099	2.037	0.154	1.485	0.173	2.25	0.23	1.467	0.23	6.998	0.265	1.494	0.272	1.662	0.222
20	2.356	0.089	1.297	0.089	2.136	0.138	1.322	0.156	2.359	0.206	1.307	0.207	7.339	0.238	1.331	0.245	1.739	0.232
25	2.467	0.081	1.197	0.082	2.237	0.127	1.22	0.143	2.471	0.188	1.206	0.189	7.685	0.218	1.228	0.225	1.815	0.242
30	2.58	0.076	1.145	0.076	2.34	0.118	1.167	0.134	2.584	0.176	1.153	0.176	8.038	0.203	1.174	0.211	1.892	0.253
35	2.695	0.072	1.134	0.073	2.443	0.113	1.156	0.128	2.699	0.167	1.142	0.168	8.395	0.194	1.164	0.201	1.969	0.263
40	2.81	0.07	1.164	0.07	2.549	0.11	1.187	0.126	2.815	0.162	1.173	0.163	8.756	0.188	1.195	0.196	2.045	0.273
45	2.927	0.069	1.238	0.069	2.655	0.109	1.263	0.126	2.932	0.16	1.248	0.161	9.12	0.186	1.271	0.194	2.122	0.283
50	3.045	0.069	1.365	0.07	2.761	0.111	1.392	0.13	3.05	0.161	1.375	0.162	9.486	0.188	1.4	0.196	2.198	0.294
55	3.163	0.071	1.559	0.071	2.868	0.114	1.589	0.136	3.168	0.166	1.57	0.167	9.854	0.193	1.599	0.202	2.275	0.304
60	3.281	0.074	1.844	0.074	2.976	0.121	1.88	0.147	3.287	0.174	1.858	0.175	10.223	0.203	1.892	0.212	2.351	0.314
65	3.4	0.078	2.261	0.079	3.083	0.13	2.305	0.162	3.405	0.187	2.278	0.188	10.591	0.217	2.32	0.228	2.428	0.324

LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT
4098	4638.063	4776.9	4776.9	4098	4475.405	4776.9	4776.9	4098	4212.735	0	0	6617.134	6532.608	4776.9	4776.901	4098.001	4295.151	0	0
519.397	2105.712	2513.51	2513.51	521.394	1628.823	2513.51	2513.51	1505	1675.44	2513.51	2513.51	3845.36	3828.347	2513.51	2513.51	1505	1797.868	0	2513.51
519.397	1436.504	1672.267	1672.267	521.394	1161.171	1672.267	1672.267	1505	1533.268	1672.267	1672.267	3165.446	3146.372	1672.267	1672.267	1505	1553.574	0	1672.267
519.397	1041.314	1175.484	1175.484	521.394	885.007	1175.484	1175.484	1505	1449.311	1175.484	1175.484	2595.958	2577.813	1175.484	1175.484	1505	1409.31	0	1175.484
519.397	800.688	873	873	521.394	716.854	873	873	1505	1398.191	873	873	2183.16	2166.424	873	873	1505	1321.47	0	873
519.397	651.143	685.012	685.012	521.394	612.35	685.012	685.012	1505	1366.42	685.012	685.012	2042.685	2025.342	685.012	685.011	1505	1266.878	0	685.011
519.397	557.977	567.895	567.895	521.394	547.244	567.895	567.895	1505	1346.627	567.895	567.895	1924.234	1906.908	567.895	567.895	1505	1232.868	0	567.895
519.397	501.915	497.421	497.421	521.394	508.067	497.421	497.421	1505	1334.717	497.421	497.421	1827.808	1810.814	497.421	497.421	1505	1212.403	0	497.421
519.397	472.407	460.326	460.326	521.394	487.446	460.326	460.326	1505	1328.448	460.326	460.326	1753.407	1736.889	460.326	460.326	1505	1201.631	0	460.326
519.397	464.259	450.085	450.085	521.394	481.753	450.085	450.085	1505	1326.717	450.085	450.085	1701.031	1685.051	450.085	450.085	1505	1198.656	0	450.085
519.397	476.087	464.953	464.953	521.394	490.018	464.953	464.953	1505	1329.23	464.953	464.953	1670.679	1655.277	464.953	464.953	1505	1202.974	0	464.953
519.397	509.909	507.469	507.469	521.394	513.653	507.469	507.469	1505	1336.415	507.469	507.469	1662.352	1647.599	507.469	507.469	1505	1215.321	0	507.469
519.397	571.735	585.19	585.19	521.394	556.859	585.19	585.19	1505	1349.55	585.19	585.19	1676.049	1662.115	585.19	585.19	1505	1237.891	0	585.19
519.397	673.382	712.968	712.968	521.394	627.891	712.968	712.968	1505	1371.145	712.968	712.968	1711.772	1699.013	712.968	712.968	1505	1274.997	0	712.968

LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT
0.147	0.77	0.888	0.936	0.147	0.586	0.888	0.934	0.147	0.28	0	0	0.397	0.392	0.888	0.91	0.147	0.369	0	0
0.015	0.041	0.823	0.041	0.017	0.03	1.178	0.06	0.017	0.024	3.828	0.325	0.183	0.185	1.178	0.144	0.013	0.051	0	0.221
0.012	0.029	0.577	0.028	0.013	0.021	0.81	0.042	0.013	0.018	2.547	0.249	0.1	0.102	0.81	0.109	0.01	0.039	0	0.154
0.009	0.021	0.429	0.02	0.011	0.016	0.589	0.03	0.011	0.014	1.775	0.201	0.048	0.05	0.589	0.087	0.008	0.031	0	0.112
0.008	0.016	0.337	0.015	0.009	0.012	0.451	0.023	0.009	0.011	1.296	0.169	0.027	0.029	0.451	0.073	0.007	0.026	0	0.086
0.007	0.013	0.278	0.012	0.007	0.01	0.363	0.019	0.007	0.009	0.991	0.147	0.023	0.024	0.363	0.063	0.006	0.022	0	0.068
0.006	0.01	0.239	0.009	0.006	0.008	0.306	0.016	0.006	0.008	0.792	0.131	0.019	0.021	0.306	0.057	0.005	0.02	0	0.055
0.005	0.009	0.213	0.008	0.005	0.007	0.267	0.013	0.005	0.007	0.66	0.119	0.017	0.018	0.267	0.052	0.004	0.018	0	0.047
0.004	0.008	0.196	0.007	0.005	0.006	0.242	0.012	0.005	0.006	0.573	0.11	0.014	0.016	0.242	0.048	0.004	0.017	0	0.042
0.004	0.007	0.184	0.006	0.004	0.005	0.225	0.011	0.004	0.006	0.515	0.104	0.013	0.014	0.225	0.046	0.003	0.016	0	0.038
0.004	0.007	0.177	0.006	0.004	0.005	0.214	0.01	0.004	0.005	0.48	0.099	0.012	0.013	0.214	0.044	0.003	0.015	0	0.036
0.004	0.007	0.173	0.006	0.004	0.005	0.209	0.01	0.004	0.005	0.463	0.097	0.012	0.013	0.209	0.043	0.003	0.015	0	0.035
0.004	0.006	0.173	0.006	0.004	0.005	0.208	0.01	0.004	0.005	0.46	0.096	0.013	0.014	0.208	0.043	0.003	0.015	0	0.034
0.004	0.007	0.175	0.006	0.004	0.005	0.212	0.01	0.004	0.005	0.472	0.098	0.014	0.015	0.212	0.044	0.003	0.015	0	0.035

LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT
75.051	16.44	1.288	1.384	75.051	34.099	1.288	1.38	75.051	62.6	0	0	121.036	119.49	1.288	1.333	75.051	53.643	0	0
3.186	0.812	1.509	0.175	3.369	1.594	2.264	0.341	3.871	3.274	16.535	4.169	11.759	11.662	2.264	1.665	2.911	2.55	0	2.444
2.643	0.709	1.586	0.184	2.795	1.344	2.379	0.358	3.211	2.729	17.374	4.38	8.514	8.461	2.379	1.75	2.415	2.222	0	2.568
2.272	0.642	1.662	0.193	2.403	1.174	2.494	0.375	2.761	2.358	18.212	4.591	6.345	6.323	2.494	1.834	2.076	2.006	0	2.692
2.024	0.599	1.739	0.202	2.14	1.063	2.608	0.393	2.459	2.11	19.05	4.803	5.264	5.258	2.608	1.919	1.849	1.87	0	2.816
1.868	0.575	1.815	0.21	1.975	0.994	2.723	0.41	2.269	1.955	19.888	5.014	4.847	4.849	2.723	2.003	1.707	1.793	0	2.939
1.786	0.567	1.892	0.219	1.889	0.961	2.838	0.427	2.17	1.876	20.727	5.225	4.5	4.51	2.838	2.087	1.632	1.764	0	3.063
1.77	0.571	1.969	0.228	1.871	0.958	2.953	0.445	2.15	1.862	21.565	5.437	4.224	4.24	2.953	2.172	1.617	1.778	0	3.187
1.817	0.589	2.045	0.237	1.921	0.985	3.068	0.462	2.207	1.912	22.403	5.648	4.019	4.04	3.068	2.256	1.66	1.833	0	3.311
1.933	0.621	2.122	0.246	2.044	1.044	3.182	0.479	2.348	2.032	23.241	5.859	3.885	3.91	3.182	2.341	1.766	1.933	0	3.435
2.13	0.669	2.198	0.255	2.252	1.142	3.297	0.496	2.587	2.234	24.079	6.071	3.821	3.85	3.297	2.425	1.946	2.085	0	3.559
2.432	0.739	2.275	0.264	2.572	1.289	3.412	0.514	2.955	2.542	24.918	6.282	3.828	3.859	3.412	2.509	2.222	2.306	0	3.683
2.878	0.839	2.351	0.273	3.043	1.503	3.527	0.531	3.496	2.995	25.756	6.493	3.906	3.939	3.527	2.594	2.63	2.619	0	3.807
3.528	0.98	2.428	0.281	3.731	1.814	3.641	0.548	4.286	3.655	26.594	6.705	4.054	4.088	3.641	2.678	3.224	3.066	0	3.93

UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	4776.9	4776.899	4098	4148.399	0	0	0	0	6.722	138.742	5938.969	768.899
2451.663	2488.488	231.943	281.941	0	263.855	2513.51	2513.51	1505	1579.869	2513.51	2513.51	1505	2409.955	284.039	1153.217	3217.095	1374.084
2451.663	1987.604	198.436	232.632	0	220.263	1672.267	1672.267	1505	1517.418	1672.267	1672.267	1505	1655.092	236.498	863.62	2693.716	1060.055
2451.663	1691.814	172.413	198.886	0	189.31	1175.484	1175.484	1505	1480.538	1175.484	1175.484	1505	1209.32	201.378	672.687	2255.341	842.853
2451.663	1511.713	152.135	176.168	0	167.474	873	873	1505	1458.083	873	873	1505	937.895	175.115	544.749	1937.58	694.69
2451.663	1399.782	136.332	161.675	0	152.508	685.012	685.011	1505	1444.127	685.012	685.012	1505	769.209	155.358	458.5	1829.447	606.332
2451.663	1330.05	124.073	153.748	0	143.014	567.895	567.895	1505	1435.433	567.895	567.895	1505	664.118	140.526	400.998	1738.267	545.344
2451.663	1288.089	114.674	151.538	0	138.203	497.421	497.421	1505	1430.201	497.421	497.421	1505	600.881	129.545	364.368	1664.041	504.73
2451.663	1266.003	107.637	154.845	0	137.769	460.326	460.326	1505	1427.447	460.326	460.326	1505	567.595	121.69	343.947	1606.769	480.353
2451.663	1259.905	102.606	164.092	0	141.851	450.085	450.085	1505	1426.687	450.085	450.085	1505	558.405	116.485	337.267	1566.451	470.021
2451.663	1268.757	99.332	180.404	0	151.078	464.953	464.953	1505	1427.791	464.953	464.953	1505	571.747	113.652	343.546	1543.087	473.04
2451.663	1294.072	97.66	205.836	0	166.706	507.469	507.469	1505	1430.947	507.469	507.469	1505	609.897	113.078	363.531	1536.677	490.071
2451.663	1340.348	97.511	243.808	0	190.888	585.19	585.19	1505	1436.717	585.19	585.19	1505	679.637	114.815	399.651	1547.221	523.27
2451.663	1416.428	98.879	299.87	0	227.165	712.968	712.968	1505	1446.202	712.968	712.968	1505	794.295	119.096	456.524	1574.719	576.734

UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0.888	0.918	0.147	0.205	0	0	0	0	0.001	0.027	0.336	0.061
0.053	0.153	0.344	0.27	0	0.297	1.178	0.308	0.047	0.067	1.178	0.065	0.009	0.06	0.367	0.049	0.145	0.061
0.038	0.107	0.295	0.226	0	0.251	0.81	0.22	0.037	0.051	0.81	0.047	0.007	0.043	0.31	0.037	0.08	0.043
0.029	0.078	0.262	0.199	0	0.222	0.589	0.167	0.029	0.04	0.589	0.035	0.006	0.033	0.273	0.028	0.039	0.03
0.022	0.06	0.241	0.181	0	0.203	0.451	0.133	0.024	0.032	0.451	0.028	0.005	0.026	0.249	0.022	0.023	0.023
0.018	0.047	0.228	0.17	0	0.191	0.363	0.111	0.02	0.027	0.363	0.023	0.004	0.021	0.234	0.018	0.019	0.019
0.015	0.039	0.222	0.163	0	0.184	0.306	0.097	0.017	0.023	0.306	0.02	0.003	0.018	0.227	0.015	0.016	0.016
0.013	0.033	0.221	0.161	0	0.182	0.267	0.087	0.015	0.021	0.267	0.017	0.003	0.016	0.225	0.013	0.014	0.014
0.012	0.029	0.225	0.161	0	0.184	0.242	0.08	0.014	0.019	0.242	0.015	0.003	0.014	0.228	0.012	0.012	0.013
0.011	0.027	0.235	0.165	0	0.19	0.225	0.075	0.012	0.017	0.225	0.014	0.002	0.013	0.238	0.012	0.011	0.012
0.01	0.025	0.253	0.173	0	0.202	0.214	0.072	0.012	0.016	0.214	0.013	0.002	0.012	0.255	0.012	0.01	0.012
0.01	0.025	0.28	0.186	0	0.22	0.209	0.07	0.011	0.016	0.209	0.013	0.002	0.012	0.282	0.012	0.01	0.013
0.011	0.025	0.322	0.207	0	0.249	0.208	0.07	0.011	0.015	0.208	0.013	0.002	0.012	0.323	0.013	0.011	0.014
0.011	0.026	0.386	0.239	0	0.292	0.212	0.071	0.011	0.015	0.212	0.013	0.002	0.012	0.386	0.015	0.012	0.016

UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	1.288	1.348	75.051	69.579	0	0	0	0	0.002	0.04	108.651	11.85
17.998	8.737	1.033	1.26	0	1.178	2.264	1.82	17.247	16.102	2.264	0.362	6.614	1.005	1.154	0.224	10.084	1.3
13.767	7.099	1.083	1.159	0	1.131	2.379	1.913	14.309	13.389	2.379	0.381	5.487	0.906	1.21	0.196	7.406	0.985
11.07	6.082	1.134	1.083	0	1.101	2.494	2.005	12.301	11.537	2.494	0.399	4.717	0.843	1.268	0.176	5.614	0.772
9.358	5.463	1.185	1.028	0	1.085	2.608	2.097	10.956	10.299	2.608	0.417	4.201	0.807	1.326	0.161	4.701	0.659
8.317	5.115	1.237	0.991	0	1.08	2.723	2.19	10.111	9.523	2.723	0.436	3.877	0.79	1.385	0.15	4.328	0.609
7.77	4.968	1.29	0.969	0	1.085	2.838	2.282	9.669	9.121	2.838	0.454	3.708	0.789	1.444	0.142	4.035	0.571
7.631	4.985	1.343	0.961	0	1.099	2.953	2.374	9.58	9.045	2.953	0.472	3.673	0.802	1.504	0.137	3.817	0.543
7.88	5.159	1.397	0.966	0	1.122	3.068	2.466	9.834	9.288	3.068	0.491	3.771	0.829	1.565	0.135	3.674	0.526
8.553	5.506	1.45	0.985	0	1.153	3.182	2.559	10.461	9.875	3.182	0.509	4.011	0.87	1.626	0.134	3.608	0.518
9.76	6.068	1.504	1.017	0	1.193	3.297	2.651	11.529	10.871	3.297	0.527	4.421	0.929	1.686	0.136	3.624	0.522
11.708	6.93	1.558	1.065	0	1.243	3.412	2.743	13.166	12.393	3.412	0.546	5.049	1.01	1.747	0.14	3.728	0.537
14.765	8.24	1.611	1.131	0	1.304	3.527	2.836	15.579	14.633	3.527	0.564	5.974	1.121	1.808	0.147	3.934	0.565
19.575	10.26	1.664	1.217	0	1.378	3.641	2.928	19.099	17.899	3.641	0.582	7.324	1.276	1.868	0.156	4.263	0.61

Vehicle Miles Traveled: 123,840

VEHICLE PERCENTAGES

Vehicle Type	Percent	Non-catalyst	Catalyst	Diesel
Light Auto	45.4%	0.0%	100.0%	0.0%
Light Truck < 3,750 lbs	9.9%	0.0%	98.0%	2.0%
Light Truck 3,751-5,750	21.3%	0.0%	100.0%	0.0%
Medium Truck 5,751-8,500	11.7%	0.0%	100.0%	0.0%
Lite-Heavy 8,501-10,000	2.2%	0.0%	77.3%	22.7%
Lite-Heavy 10,001-14,000	0.7%	0.0%	57.1%	42.9%
Med-Heavy 14,001-33,000	1.0%	0.0%	20.0%	80.0%
Heavy-Heavy 33,001-60,000	1.8%	0.0%	0.0%	100.0%
Line Haul > 60,000 lbs	0.1%	0.0%	0.0%	100.0%
Urban Bus	0.0%	0.0%	0.0%	0.0%
Motorcycle	4.4%	38.6%	61.4%	0.0%
School Bus	0.1%	0.0%	0.0%	100.0%
Motorhome	1.4%	0.0%	92.9%	7.1%

CO2 EMISSION FACTORS (grams/mile)

Vehicle Type	EMFAC Type	Non-catalyst	Catalyst	Diesel
Light Auto	LDA	469.639	333.249	353.976
Light Truck < 3,750 lbs	LDT1	483.113	419.487	346.419
Light Truck 3,751-5,750	LDT2	482.975	425.151	348.474
Medium Truck 5,751-8,500	MDV	658.554	579.376	346.411
Lite-Heavy 8,501-10,000	LHDT1	567.895	567.895	519.397
Lite-Heavy 10,001-14,000	LHDT2	567.895	567.895	521.394
Med-Heavy 14,001-33,000	MHDT	567.895	567.895	1505
Heavy-Heavy 33,001-60,000	HHDT	567.895	567.895	1924.234
Line Haul > 60,000 lbs	LHV	567.895	567.895	1505
Urban Bus	UB	0	567.895	2451.663
Motorcycle	MCY	124.073	153.748	0
School Bus	SBUS	567.895	567.895	1505
Motorhome	MH	567.895	567.895	1505

METHANE EMISSION FACTORS (grams/mile)

Vehicle Type	EMFAC Type	Non-catalyst	Catalyst	Diesel
Light Auto	LDA	0.228	0.01	0.006
Light Truck < 3,750 lbs	LDT1	0.211	0.013	0.003
Light Truck 3,751-5,750	LDT2	0.213	0.017	0.004
Medium Truck 5,751-8,500	MDV	0.462	0.021	0.003
Lite-Heavy 8,501-10,000	LHDT1	0.239	0.012	0.006
Lite-Heavy 10,001-14,000	LHDT2	0.239	0.009	0.006
Med-Heavy 14,001-33,000	MHDT	0.306	0.016	0.006
Heavy-Heavy 33,001-60,000	HHDT	0.792	0.131	0.019
Line Haul > 60,000 lbs	LHV	0.306	0.057	0.005
Urban Bus	UB	0	0.055	0.015
Motorcycle	MCY	0.222	0.163	0
School Bus	SBUS	0.306	0.097	0.017
Motorhome	MH	0.306	0.02	0.003

NOx EMISSION FACTORS (grams/mile)

Vehicle Type	EMFAC Type	Non-catalyst	Catalyst	Diesel
Light Auto	LDA	2.58	0.076	1.145
Light Truck < 3,750 lbs	LDT1	2.34	0.118	1.167
Light Truck 3,751-5,750	LDT2	2.584	0.176	1.153
Medium Truck 5,751-8,500	MDV	8.038	0.203	1.174
Lite-Heavy 8,501-10,000	LHDT1	1.892	0.253	1.786
Lite-Heavy 10,001-14,000	LHDT2	1.892	0.219	1.889
Med-Heavy 14,001-33,000	MHDT	2.838	0.427	2.17
Heavy-Heavy 33,001-60,000	HHDT	20.727	5.225	4.5
Line Haul > 60,000 lbs	LHV	2.838	2.087	1.632
Urban Bus	UB	0	3.063	7.77
Motorcycle	MCY	1.29	0.969	0
School Bus	SBUS	2.838	2.282	9.669
Motorhome	MH	2.838	0.454	3.708

CO2 EMISSIONS (grams)

Vehicle Type	Non-catalyst	Catalyst	Diesel
Light Auto	0.00	18,736,383.04	0.00
Light Truck < 3,750 lbs	0.00	5,040,119.40	84,943.07
Light Truck 3,751-5,750	0.00	11,214,601.78	0.00
Medium Truck 5,751-8,500	0.00	8,394,743.12	0.00
Lite-Heavy 8,501-10,000	0.00	1,196,000.24	1,415,087.08
Lite-Heavy 10,001-14,000	0.00	281,101.55	193,902.05
Med-Heavy 14,001-33,000	0.00	140,656.27	1,491,033.96
Heavy-Heavy 33,001-60,000	0.00	0.00	4,289,349.53
Line Haul > 60,000 lbs	0.00	0.00	186,379.25
Urban Bus	0.00	0.00	0.00
Motorcycle	260,962.63	514,388.88	0.00
School Bus	0.00	0.00	186,379.25
Motorhome	0.00	914,687.71	185,260.97
Total (grams)	260,962.63	46,432,682.00	8,032,335.16
Total (pounds)	575.32	102,366.54	17,708.27

Total CO2 Running Emissions (pounds): 120,650.13

METHANE EMISSIONS (grams)

Vehicle Type	Non-catalyst	Catalyst	Diesel
Light Auto	0.00	562.23	0.00
Light Truck < 3,750 lbs	0.00	156.19	0.74
Light Truck 3,751-5,750	0.00	448.42	0.00
Medium Truck 5,751-8,500	0.00	304.27	0.00
Lite-Heavy 8,501-10,000	0.00	25.27	3.71
Lite-Heavy 10,001-14,000	0.00	4.45	2.23
Med-Heavy 14,001-33,000	0.00	3.96	5.94
Heavy-Heavy 33,001-60,000	0.00	0.00	42.35
Line Haul > 60,000 lbs	0.00	0.00	0.62
Urban Bus	0.00	0.00	0.00
Motorcycle	466.93	545.34	0.00
School Bus	0.00	0.00	2.11
Motorhome	0.00	32.21	0.37
Total (grams)	466.93	2,082.37	58.07
Total (pounds)	1.03	4.59	0.13

Total Methane Running Emissions (pounds): 5.75

N2O EMISSIONS (grams)

Vehicle Type	Non-catalyst	Catalyst	Diesel
Light Auto	0.00	208.22	0.00
Light Truck < 3,750 lbs	0.00	69.09	13.94
Light Truck 3,751-5,750	0.00	226.23	0.00
Medium Truck 5,751-8,500	0.00	143.33	0.00
Lite-Heavy 8,501-10,000	0.00	25.96	53.83
Lite-Heavy 10,001-14,000	0.00	5.28	34.23
Med-Heavy 14,001-33,000	0.00	5.15	104.76
Heavy-Heavy 33,001-60,000	0.00	0.00	488.82
Line Haul > 60,000 lbs	0.00	0.00	9.85
Urban Bus	0.00	0.00	0.00
Motorcycle	132.22	157.98	0.00
School Bus	0.00	0.00	58.35
Motorhome	0.00	35.63	22.24
Total (grams)	132.22	876.89	786.02
Total (pounds)	0.29	1.93	1.73

Total N2O Running Emissions (pounds): 3.96

N_2O/NOx Ratio		
N_2O (mg km^{-1})	NOx (mg km^{-1})	N_2O/NOx Ratio
20	700	0.029
30	650	0.046
12	340	0.035
13	250	0.052
12	260	0.046
13	215	0.060
9	140	0.064
15	160	0.094
0.5	35	0.014
2	35	0.057
23	1300	0.018
22	800	0.028
40	1700	0.024
35	950	0.037
80	1700	0.047
120	1200	0.100
35	1400	0.025
43	1000	0.043
18	600	0.030
20	420	0.048
25	550	0.045
25	500	0.050
12	150	0.080
15	150	0.100
4	110	0.036
5	85	0.059
	Average	0.04873

Source: California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

GREENHOUSE GAS EMISSIONS RESULTING FROM ELECTRICITY USE

Residential

Input	3,114	Dwelling Units	21,330,900	Annual Energy Usage (kWh)
	6,850.00	Avg Annual Energy Usage Rate (kWh/DU)[1]		
Output	8,501.94	CO2 Emissions (mtpy)	0.88	CO2 produced per kWh (lbs)[2]
	0.08	N2O Emissions (mtpy)	0.000008	N2O produced per kWh (lbs)[2]
	0.35	CH4 Emissions (mtpy)	0.000036	CH4 produced per kWh (lbs)[2]

Retail

200,000	Square Feet	2,710,000	Annual Energy Usage (kWh)
13.55	Avg Annual Energy Usage Rate (kWh/SF)[1]		
1,080.14	CO2 Emissions (mtpy)	0.88	CO2 produced per kWh (lbs)[2]
0.01	N2O Emissions (mtpy)	0.000008	N2O produced per kWh (lbs)[2]
0.04	CH4 Emissions (mtpy)	0.000036	CH4 produced per kWh (lbs)[2]

[1]Source: SCAQMD CEQA Handbook, 1993
[2]Source: EPA eGRID 2006, WECC California Subregion
mtpy= metric tons per year

GREENHOUSE GAS EMISSIONS RESULTING FROM NATURAL GAS USE

Residential (Single Family)

Input	299	Dwelling Units	23,914,020	Annual NG Usage (CF)	
	6,665.00	Avg Monthly NG Rate (CF/DU)[1]	NG Emission Factors		
			CO2:	0.12	lb/CF
			N2O:	2.2E-06	lb/CF
Output	1,301.66	CO2 Emissions (mtpy)	CH4:	2.3E-06	lb/CF
	0.02	N2O Emissions (mtpy)			
	0.02	CH4 Emissions (mtpy)			

Residential (Multi-Family)

Input	2,815	Dwelling Units	135,508,470	Annual NG Usage (CF)	
	4,011.50	Avg Monthly NG Rate (CF/DU)[1]	NG Emission Factors		
			CO2:	0.12	lb/CF
			N2O:	2.2E-06	lb/CF
Output	7,375.83	CO2 Emissions (mtpy)	CH4:	2.3E-06	lb/CF
	0.14	N2O Emissions (mtpy)			
	0.14	CH4 Emissions (mtpy)			

Retail

200,000	Square Feet	6,960,000	Annual NG Usage (CF)	
2.90	Avg Monthly NG Rate (CF/SF)[1]	NG Emission Factors		
		CO2:	0.12	lb/CF
		N2O:	2.2E-06	lb/CF
378.84	CO2 Emissions (mtpy)	CH4:	2.3E-06	lb/CF
0.01	N2O Emissions (mtpy)			
0.01	CH4 Emissions (mtpy)			

[1]Source: SCAQMD CEQA Handbook, 1993
mtpy= metric tons per year

GREENHOUSE GAS EMISSIONS RESULTING FROM WATER USE

Residential

Input	3,114	Dwelling Units	622,800,000	Annual Water Usage (gal)
	200,000.00	Avg Annual Water Usage Rate (gal/DU)[1]	5,293,800	Resulting Electricity Use (kWh)
			0.0085	Water Embodied Energy (kWh/gal)[3]
Output	2,109.97	CO2 Emissions (mtpy)	0.88	CO2 produced per kWh (lbs)[2]
	0.02	N2O Emissions (mtpy)	0.000008	N2O produced per kWh (lbs)[2]
	0.09	CH4 Emissions (mtpy)	0.000036	CH4 produced per kWh (lbs)[2]

Retail

200,000	Square Feet	1,400,000	Annual Water Usage (gal)
7.00	Avg Annual Water Usage Rate (gal/SF)[2]	11,900	Resulting Electricity Use (kWh)
		0.0085	Water Embodied Energy (kWh/gal)[3]
4.74	CO2 Emissions (mtpy)	0.88	CO2 produced per kWh (lbs)[2]
0.00	N2O Emissions (mtpy)	0.000008	N2O produced per kWh (lbs)[2]
0.00	CH4 Emissions (mtpy)	0.000036	CH4 produced per kWh (lbs)[2]

[1]Source: American Water Works Association Commercial and Institutional End Uses of Water
[2]Source: EPA eGRID 2006, WECC California Subregion
[3]Demand Response Research Center: Water Supply Related Electricity Demand in California, 2006
mtpy= metric tons per year

Carbon Dioxide Calculation
Based on URBEMIS 2007 Assumptions and EMFAC 2007 Emission Factors

Minutes since engine shutoff	5	10	20	30	40	50	60	120	180	240	300	360	420	480	540	600	660	720	Total
Home-Work	0.7%	1.0%	1.4%	2.2%	2.6%	2.8%	2.2%	2.6%	6.2%	8.9%	8.6%	8.6%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%	100.0%
Home-Shop	3.3%	9.5%	14.4%	18.3%	12.2%	7.5%	4.2%	3.6%	3.7%	2.1%	2.6%	2.6%	2.6%	2.6%	2.7%	2.7%	2.7%	2.7%	100.0%
Home-Other	6.1%	7.6%	7.8%	7.2%	7.0%	7.9%	6.2%	6.6%	7.2%	4.9%	4.0%	4.0%	4.0%	3.9%	3.9%	3.9%	3.9%	3.9%	100.0%
Commercial Commute	2.6%	5.0%	3.7%	4.2%	4.7%	3.7%	3.0%	3.3%	8.5%	10.8%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.4%	100.0%
Commercial Non-Commute	5.8%	11.3%	7.3%	7.4%	7.7%	5.5%	4.4%	4.4%	12.1%	13.9%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.7%	100.0%
Commercial Customer	9.3%	14.7%	13.2%	14.0%	6.7%	7.1%	5.1%	4.5%	8.8%	6.4%	1.2%	1.2%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	100.0%

Residential Trips	Home-Work %	Home-Shop %	Home-Other %
2,374.31	33%	18%	49%
8,665.77			

Commercial Trips	Commute	Non-Work	Customer
8,391.00	2.0%	1.0%	97.0%

Trips	5	10	20	30	40	50	60	120	180	240	300	360	420	480	540	600	660	720	Total
Home-Work	25.43	36.32	50.85	79.91	94.44	101.70	79.91	94.44	225.20	323.26	312.37	312.37	316.00	316.00	316.00	316.00	316.00	316.00	3,632.19
Home-Shop	65.58	188.79	286.16	363.66	242.44	149.04	83.46	71.54	73.53	41.73	51.67	51.67	51.67	51.67	53.65	53.65	53.65	53.65	1,987.21
Home-Other	330.66	411.97	422.81	390.29	379.45	428.23	336.08	357.76	390.29	265.61	216.83	216.83	216.83	211.41	211.41	211.41	211.41	211.41	5,420.68
Commercial Commute	4.36	8.39	6.21	7.05	7.89	6.21	5.03	5.54	14.26	18.12	10.57	10.57	10.57	10.57	10.57	10.57	10.57	10.74	167.82
Commercial Non-Commute	4.87	9.48	6.13	6.21	6.46	4.62	3.69	3.69	10.15	11.66	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.27	83.91
Commercial Customer	756.95	1,196.47	1,074.38	1,139.50	545.33	577.89	415.10	366.27	716.26	520.91	97.67	97.67	105.81	105.81	105.81	105.81	105.81	105.81	8,139.27
Total	1,187.85	1,851.42	1,846.54	1,986.61	1,276.00	1,267.69	923.28	899.24	1,429.68	1,181.31	691.20	691.20	702.98	697.56	699.54	699.54	699.54	699.88	19,431.08

User Input from URBEMIS

D-104

Trip Distribution

Trips	Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
1187.85	5	0	525.0284	0	0	116.4209	1.175969	0	258.9507	0	0	143.7295	0	0	22.56672	4.753764	0	4.747825	3.567105	0
1851.42	10	0	818.3296	0	0	181.4581	1.83291	0	403.6105	0	0	224.0223	0	0	35.17336	7.4094	0	7.400143	5.559827	0
1846.54	20	0	816.1711	0	0	180.9795	1.828075	0	402.5459	0	0	223.4314	0	0	35.08058	7.389857	0	7.380624	5.545162	0
1986.61	30	0	878.0829	0	0	194.7079	1.966747	0	433.0816	0	0	240.3802	0	0	37.74167	7.950425	0	7.940491	5.965798	0
1276.00	40	0	563.9939	0	0	125.0612	1.263244	0	278.1689	0	0	154.3965	0	0	24.24153	5.106569	0	5.100189	3.831841	0
1267.69	50	0	560.3183	0	0	124.2462	1.255012	0	276.3561	0	0	153.3903	0	0	24.08355	5.073289	0	5.066951	3.806869	0
923.28	60	0	408.0909	0	0	90.49093	0.91405	0	201.2756	0	0	111.7172	0	0	17.54052	3.694977	0	3.690361	2.772618	0
899.24	120	0	397.4635	0	0	88.13438	0.890246	0	196.034	0	0	108.8079	0	0	17.08374	3.598753	0	3.594257	2.700414	0
1429.68	180	0	631.9208	0	0	140.1234	1.415388	0	311.6713	0	0	172.9919	0	0	27.16115	5.721599	0	5.714451	4.293344	0
1181.31	240	0	522.1393	0	0	115.7803	1.169498	0	257.5257	0	0	142.9386	0	0	22.44254	4.727605	0	4.721699	3.547476	0
691.20	300	0	305.5124	0	0	67.74495	0.684292	0	150.6826	0	0	83.63573	0	0	13.1315	2.7662	0	2.762744	2.075687	0
691.20	360	0	305.5124	0	0	67.74495	0.684292	0	150.6826	0	0	83.63573	0	0	13.1315	2.7662	0	2.762744	2.075687	0
702.98	420	0	310.7153	0	0	68.89867	0.695946	0	153.2487	0	0	85.06008	0	0	13.35514	2.813309	0	2.809795	2.111037	0
697.56	480	0	308.3194	0	0	68.36738	0.69058	0	152.067	0	0	84.40418	0	0	13.25215	2.791616	0	2.788128	2.094758	0
699.54	540	0	309.1977	0	0	68.56215	0.692547	0	152.5002	0	0	84.64463	0	0	13.28991	2.799569	0	2.796071	2.100726	0
699.54	600	0	309.1977	0	0	68.56215	0.692547	0	152.5002	0	0	84.64463	0	0	13.28991	2.799569	0	2.796071	2.100726	0
699.54	660	0	309.1977	0	0	68.56215	0.692547	0	152.5002	0	0	84.64463	0	0	13.28991	2.799569	0	2.796071	2.100726	0
699.88	720	0	309.3461	0	0	68.59505	0.692879	0	152.5734	0	0	84.68524	0	0	13.29628	2.800912	0	2.797413	2.101734	0
19431		0	8589	0	0	1904	19	0	4236	0	0	2351	0	0	369	78	0	78	58	0

Pollutant Name: Carbon Dioxide

Temperature: 80F
Relative Humidity: ALL

EMISSION FACTOR

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	11.989	0	0	15.093	0	0	15.389	0	0	20.894	0	0	25.679	0	0	25.911	0	0
10	0	13.446	0	0	16.947	0	0	17.282	0	0	23.488	0	0	29.04	0	0	29.184	0	0
20	0	16.852	0	0	21.273	0	0	21.696	0	0	29.529	0	0	36.801	0	0	36.786	0	0
30	0	20.913	0	0	26.424	0	0	26.951	0	0	36.708	0	0	45.946	0	0	45.794	0	0
40	0	25.631	0	0	32.398	0	0	33.046	0	0	45.025	0	0	56.474	0	0	56.209	0	0
50	0	31.005	0	0	39.196	0	0	39.981	0	0	54.481	0	0	68.387	0	0	68.031	0	0
60	0	37.035	0	0	46.819	0	0	47.756	0	0	65.076	0	0	81.683	0	0	81.26	0	0
120	0	86.412	0	0	109.071	0	0	111.24	0	0	151.381	0	0	188.556	0	0	188.552	0	0
180	0	98.071	0	0	123.809	0	0	126.273	0	0	171.864	0	0	214.252	0	0	214.124	0	0
240	0	109.715	0	0	138.523	0	0	141.28	0	0	192.307	0	0	239.856	0	0	239.632	0	0
300	0	121.343	0	0	153.213	0	0	156.263	0	0	212.71	0	0	265.37	0	0	265.078	0	0
360	0	132.956	0	0	167.878	0	0	171.22	0	0	233.073	0	0	290.792	0	0	290.46	0	0
420	0	144.554	0	0	182.519	0	0	186.153	0	0	253.396	0	0	316.122	0	0	315.778	0	0
480	0	156.136	0	0	197.135	0	0	201.06	0	0	273.679	0	0	341.362	0	0	341.034	0	0
540	0	167.703	0	0	211.728	0	0	215.941	0	0	293.922	0	0	366.511	0	0	366.226	0	0
600	0	179.254	0	0	226.296	0	0	230.798	0	0	314.125	0	0	391.568	0	0	391.354	0	0
660	0	190.79	0	0	240.84	0	0	245.63	0	0	334.288	0	0	416.534	0	0	416.419	0	0
720	0	202.311	0	0	255.359	0	0	260.436	0	0	354.411	0	0	441.409	0	0	441.421	0	0

Pollutant Name: Carbon Dioxide Emissions

EMISSIONS (GRAMS/DAY)

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	6294.565	0	0	1757.14	0	0	3984.992	0	0	3003.084	0	0	579.4907	0	0	123.0209	0	0
10	0	11003.26	0	0	3075.17	0	0	6975.197	0	0	5261.837	0	0	1021.434	0	0	215.9658	0	0
20	0	13754.11	0	0	3849.976	0	0	8733.636	0	0	6597.707	0	0	1291.001	0	0	271.5036	0	0
30	0	18363.35	0	0	5144.962	0	0	11671.98	0	0	8823.875	0	0	1734.079	0	0	363.6269	0	0
40	0	14455.73	0	0	4051.732	0	0	9192.37	0	0	6951.703	0	0	1369.016	0	0	286.6765	0	0
50	0	17372.67	0	0	4869.952	0	0	11048.99	0	0	8356.858	0	0	1647.001	0	0	344.7097	0	0
60	0	15113.65	0	0	4236.695	0	0	9612.118	0	0	7270.108	0	0	1432.763	0	0	299.8787	0	0
120	0	34345.61	0	0	9612.905	0	0	21806.82	0	0	16471.45	0	0	3221.241	0	0	677.7043	0	0
180	0	61973.1	0	0	17348.54	0	0	39355.67	0	0	29731.08	0	0	5819.332	0	0	1223.601	0	0
240	0	57286.52	0	0	16038.23	0	0	36383.24	0	0	27488.09	0	0	5382.978	0	0	1131.47	0	0
300	0	37071.79	0	0	10379.41	0	0	23546.11	0	0	17790.16	0	0	3484.707	0	0	732.3427	0	0
360	0	40619.7	0	0	11372.89	0	0	25799.87	0	0	19493.23	0	0	3818.536	0	0	802.4666	0	0
420	0	44915.14	0	0	12575.32	0	0	28527.71	0	0	21553.88	0	0	4221.852	0	0	887.2713	0	0
480	0	48139.76	0	0	13477.6	0	0	30574.6	0	0	23099.65	0	0	4523.782	0	0	950.8465	0	0
540	0	51853.39	0	0	14516.53	0	0	32931.06	0	0	24878.92	0	0	4870.897	0	0	1023.994	0	0
600	0	55424.93	0	0	15515.34	0	0	35196.75	0	0	26588.99	0	0	5203.902	0	0	1094.254	0	0
660	0	58991.84	0	0	16512.51	0	0	37458.64	0	0	28295.68	0	0	5535.698	0	0	1164.337	0	0
720	0	62584.12	0	0	17516.36	0	0	39735.61	0	0	30013.38	0	0	5869.099	0	0	1234.837	0	0
Total (grams/day):	0	649563.2	0	0	181851.3	0	0	412535.4	0	0	311669.7	0	0	61026.81	0	0	12828.51	0	0
Total (lbs/day):	0	1432.042	0	0	400.9134	0	0	909.4848	0	0	687.1141	0	0	134.5411	0	0	28.28201	0	0

Grand Total (lbs/day): 3795.4668

Pollutant Name: Methane

Temperature: 80F
Relative Humidity: ALL

EMISSION FACTOR

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	0	0	0	0	0	0	0	0	0	0.001	0	0	0.003	0	0	0.002	0	0
10	0	0	0	0	0.001	0	0	0.001	0	0	0.001	0	0	0.006	0	0	0.005	0	0
20	0	0.001	0	0	0.001	0	0	0.002	0	0	0.002	0	0	0.011	0	0	0.009	0	0
30	0	0.001	0	0	0.002	0	0	0.003	0	0	0.004	0	0	0.016	0	0	0.014	0	0
40	0	0.002	0	0	0.002	0	0	0.004	0	0	0.005	0	0	0.021	0	0	0.018	0	0
50	0	0.002	0	0	0.003	0	0	0.004	0	0	0.006	0	0	0.025	0	0	0.022	0	0
60	0	0.002	0	0	0.003	0	0	0.005	0	0	0.007	0	0	0.029	0	0	0.026	0	0
120	0	0.004	0	0	0.005	0	0	0.008	0	0	0.011	0	0	0.049	0	0	0.044	0	0
180	0	0.004	0	0	0.005	0	0	0.009	0	0	0.013	0	0	0.052	0	0	0.047	0	0
240	0	0.005	0	0	0.006	0	0	0.01	0	0	0.013	0	0	0.056	0	0	0.05	0	0
300	0	0.005	0	0	0.006	0	0	0.01	0	0	0.014	0	0	0.059	0	0	0.053	0	0
360	0	0.005	0	0	0.006	0	0	0.011	0	0	0.015	0	0	0.062	0	0	0.056	0	0
420	0	0.005	0	0	0.007	0	0	0.012	0	0	0.016	0	0	0.065	0	0	0.059	0	0
480	0	0.006	0	0	0.007	0	0	0.012	0	0	0.016	0	0	0.069	0	0	0.062	0	0
540	0	0.006	0	0	0.007	0	0	0.013	0	0	0.017	0	0	0.072	0	0	0.065	0	0
600	0	0.006	0	0	0.007	0	0	0.013	0	0	0.018	0	0	0.075	0	0	0.068	0	0
660	0	0.006	0	0	0.008	0	0	0.014	0	0	0.019	0	0	0.078	0	0	0.071	0	0
720	0	0.007	0	0	0.008	0	0	0.014	0	0	0.019	0	0	0.081	0	0	0.074	0	0

Pollutant Name: Methane Emissions

EMISSIONS (GRAMS/DAY)

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	0	0	0	0	0	0	0	0	0	0.143729	0	0	0.0677	0	0	0.009496	0	0
10	0	0	0	0	0.181458	0	0	0.403611	0	0	0.224022	0	0	0.21104	0	0	0.037001	0	0
20	0	0.816171	0	0	0.180979	0	0	0.805092	0	0	0.446863	0	0	0.385886	0	0	0.066426	0	0
30	0	0.878083	0	0	0.389416	0	0	1.299245	0	0	0.961521	0	0	0.603867	0	0	0.111167	0	0
40	0	1.127988	0	0	0.250122	0	0	1.112676	0	0	0.771983	0	0	0.509072	0	0	0.091803	0	0
50	0	1.120637	0	0	0.372738	0	0	1.105424	0	0	0.920342	0	0	0.602089	0	0	0.111473	0	0
60	0	0.816182	0	0	0.271473	0	0	1.006378	0	0	0.78202	0	0	0.508675	0	0	0.095949	0	0
120	0	1.589854	0	0	0.440672	0	0	1.568272	0	0	1.196887	0	0	0.837103	0	0	0.158147	0	0
180	0	2.527683	0	0	0.700617	0	0	2.805042	0	0	2.248894	0	0	1.41238	0	0	0.268579	0	0
240	0	2.610697	0	0	0.694682	0	0	2.575257	0	0	1.858202	0	0	1.256782	0	0	0.236085	0	0
300	0	1.527562	0	0	0.40647	0	0	1.506826	0	0	1.1709	0	0	0.774759	0	0	0.146425	0	0
360	0	1.527562	0	0	0.40647	0	0	1.657508	0	0	1.254536	0	0	0.814153	0	0	0.154714	0	0
420	0	1.553577	0	0	0.482291	0	0	1.838985	0	0	1.360961	0	0	0.868084	0	0	0.165778	0	0
480	0	1.849916	0	0	0.478572	0	0	1.824804	0	0	1.350467	0	0	0.914399	0	0	0.172864	0	0
540	0	1.855186	0	0	0.479935	0	0	1.982503	0	0	1.438959	0	0	0.956873	0	0	0.181745	0	0
600	0	1.855186	0	0	0.479935	0	0	1.982503	0	0	1.523603	0	0	0.996743	0	0	0.190133	0	0
660	0	1.855186	0	0	0.548497	0	0	2.135003	0	0	1.608248	0	0	1.036613	0	0	0.198521	0	0
720	0	2.165423	0	0	0.54876	0	0	2.136028	0	0	1.60902	0	0	1.076999	0	0	0.207009	0	0
Total (grams/day):	0	25.67689	0	0	7.313087	0	0	27.74516	0	0	20.87116	0	0	13.83322	0	0	2.603314	0	0
Total (lbs/day):	0	0.056608	0	0	0.016123	0	0	0.061168	0	0	0.046013	0	0	0.030497	0	0	0.005739	0	0

Grand Total (lbs/day): 0.4503934

Pollutant Name: Oxides of Nitrogen

Temperature: 80F
Humidity: ALL

EMISSION FACTOR

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	0.036	0	0	0.048	0	0	0.097	0	0	0.116	0	0	1.15	0	0	1.089	0	0
10	0	0.039	0	0	0.051	0	0	0.103	0	0	0.123	0	0	1.205	0	0	1.129	0	0
20	0	0.043	0	0	0.057	0	0	0.114	0	0	0.136	0	0	1.305	0	0	1.203	0	0
30	0	0.047	0	0	0.062	0	0	0.123	0	0	0.147	0	0	1.391	0	0	1.269	0	0
40	0	0.05	0	0	0.066	0	0	0.13	0	0	0.156	0	0	1.464	0	0	1.326	0	0
50	0	0.052	0	0	0.069	0	0	0.136	0	0	0.164	0	0	1.525	0	0	1.374	0	0
60	0	0.054	0	0	0.071	0	0	0.141	0	0	0.169	0	0	1.572	0	0	1.414	0	0
120	0	0.059	0	0	0.077	0	0	0.152	0	0	0.183	0	0	1.715	0	0	1.553	0	0
180	0	0.058	0	0	0.077	0	0	0.152	0	0	0.183	0	0	1.712	0	0	1.55	0	0
240	0	0.058	0	0	0.076	0	0	0.151	0	0	0.182	0	0	1.699	0	0	1.538	0	0
300	0	0.057	0	0	0.076	0	0	0.149	0	0	0.179	0	0	1.677	0	0	1.517	0	0
360	0	0.056	0	0	0.074	0	0	0.147	0	0	0.176	0	0	1.647	0	0	1.489	0	0
420	0	0.055	0	0	0.073	0	0	0.143	0	0	0.172	0	0	1.608	0	0	1.453	0	0
480	0	0.054	0	0	0.071	0	0	0.139	0	0	0.167	0	0	1.561	0	0	1.408	0	0
540	0	0.052	0	0	0.068	0	0	0.135	0	0	0.162	0	0	1.505	0	0	1.356	0	0
600	0	0.05	0	0	0.065	0	0	0.129	0	0	0.155	0	0	1.44	0	0	1.295	0	0
660	0	0.047	0	0	0.062	0	0	0.123	0	0	0.148	0	0	1.367	0	0	1.227	0	0
720	0	0.045	0	0	0.059	0	0	0.116	0	0	0.139	0	0	1.286	0	0	1.15	0	0

Pollutant Name: Nitrous Oxide

EMISSIONS (GRAMS/DAY)

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	0.921051	0	0	0.272314	0	0	1.224016	0	0	0.812461	0	0	1.264634	0	0	0.251954	0	0
10	0	1.555218	0	0	0.450967	0	0	2.025808	0	0	1.342749	0	0	2.065377	0	0	0.407129	0	0
20	0	1.710205	0	0	0.502693	0	0	2.236242	0	0	1.48075	0	0	2.230878	0	0	0.43267	0	0
30	0	2.011092	0	0	0.588266	0	0	2.595813	0	0	1.721926	0	0	2.558272	0	0	0.491029	0	0
40	0	1.374178	0	0	0.402221	0	0	1.762181	0	0	1.173709	0	0	1.729416	0	0	0.329555	0	0
50	0	1.419831	0	0	0.417764	0	0	1.831498	0	0	1.225858	0	0	1.789735	0	0	0.339259	0	0
60	0	1.073864	0	0	0.313085	0	0	1.382957	0	0	0.920037	0	0	1.343673	0	0	0.254283	0	0
120	0	1.142741	0	0	0.3307	0	0	1.452023	0	0	0.970309	0	0	1.427728	0	0	0.272006	0	0
180	0	1.786031	0	0	0.525775	0	0	2.308548	0	0	1.542678	0	0	2.265951	0	0	0.431623	0	0
240	0	1.47575	0	0	0.428792	0	0	1.894943	0	0	1.267708	0	0	1.858078	0	0	0.353878	0	0
300	0	0.848598	0	0	0.250893	0	0	1.094077	0	0	0.72953	0	0	1.073114	0	0	0.204232	0	0
360	0	0.833711	0	0	0.244291	0	0	1.079391	0	0	0.717304	0	0	1.053917	0	0	0.200463	0	0
420	0	0.832768	0	0	0.245094	0	0	1.067902	0	0	0.71294	0	0	1.046485	0	0	0.198948	0	0
480	0	0.811322	0	0	0.236541	0	0	1.030026	0	0	0.686877	0	0	1.008063	0	0	0.1913	0	0
540	0	0.783498	0	0	0.227191	0	0	1.003235	0	0	0.66821	0	0	0.974668	0	0	0.184759	0	0
600	0	0.753364	0	0	0.217168	0	0	0.958647	0	0	0.639337	0	0	0.932573	0	0	0.176448	0	0
660	0	0.708162	0	0	0.207145	0	0	0.914059	0	0	0.610463	0	0	0.885297	0	0	0.167183	0	0
720	0	0.678353	0	0	0.197217	0	0	0.862453	0	0	0.573616	0	0	0.833239	0	0	0.156766	0	0
Total (grams/day):	0	20.71974	0	0	6.058117	0	0	26.72382	0	0	17.79646	0	0	26.3411	0	0	5.043486	0	0
Total (lbs/day):	0	0.045679	0	0	0.013356	0	0	0.058916	0	0	0.039234	0	0	0.058072	0	0	0.011119	0	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
2.37807	10.68825	0	0	24.94479	0	0	0	0	0	0	15.44201	32.07187	0	0	0	1.187847	0	17.81058	2.382821
3.706552	16.65912	0	0	38.87991	0	0	0	0	0	0	24.06852	49.98846	0	0	0	1.851424	0	27.76026	3.713957
3.696775	16.61517	0	0	38.77736	0	0	0	0	0	0	24.00503	49.8566	0	0	0	1.846541	0	27.68703	3.704161
3.977199	17.87554	0	0	41.71887	0	0	0	0	0	0	25.82597	53.63855	0	0	0	1.986613	0	29.78727	3.985145
2.554561	11.48149	0	0	26.79609	0	0	0	0	0	0	16.58806	34.45211	0	0	0	1.276004	0	19.13241	2.559665
2.537912	11.40666	0	0	26.62146	0	0	0	0	0	0	16.47995	34.22759	0	0	0	1.267689	0	19.00772	2.542983
1.848412	8.307697	0	0	19.38894	0	0	0	0	0	0	12.00267	24.92863	0	0	0	0.923283	0	13.8437	1.852105
1.800276	8.091349	0	0	18.88401	0	0	0	0	0	0	11.6901	24.27944	0	0	0	0.899239	0	13.48318	1.803873
2.862229	12.86431	0	0	30.02338	0	0	0	0	0	0	18.5859	38.60149	0	0	0	1.429685	0	21.4367	2.867948
2.364984	10.62943	0	0	24.80752	0	0	0	0	0	0	15.35704	31.89539	0	0	0	1.181311	0	17.71257	2.369709
1.383791	6.219457	0	0	14.51529	0	0	0	0	0	0	8.985657	18.66252	0	0	0	0.691204	0	10.36392	1.386556
1.383791	6.219457	0	0	14.51529	0	0	0	0	0	0	8.985657	18.66252	0	0	0	0.691204	0	10.36392	1.386556
1.407358	6.325377	0	0	14.76249	0	0	0	0	0	0	9.138686	18.98035	0	0	0	0.702976	0	10.54042	1.41017
1.396506	6.276602	0	0	14.64866	0	0	0	0	0	0	9.068218	18.83399	0	0	0	0.697555	0	10.45914	1.399296
1.400484	6.294483	0	0	14.69039	0	0	0	0	0	0	9.094051	18.88765	0	0	0	0.699542	0	10.48894	1.403282
1.400484	6.294483	0	0	14.69039	0	0	0	0	0	0	9.094051	18.88765	0	0	0	0.699542	0	10.48894	1.403282
1.400484	6.294483	0	0	14.69039	0	0	0	0	0	0	9.094051	18.88765	0	0	0	0.699542	0	10.48894	1.403282
1.401156	6.297503	0	0	14.69744	0	0	0	0	0	0	9.098415	18.89671	0	0	0	0.699878	0	10.49397	1.403955
39	175	0	0	408	0	0	0	0	0	0	253	525	0	0	0	19	0	291	39

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
9.546	0	0	9.546	0	0	9.546	0	0	9.546	0	35.953	1.769	0	0	9.546	0	0	9.546	0
19.039	0	0	19.039	0	0	19.039	0	0	19.039	0	39.014	3.528	0	0	19.039	0	0	19.039	0
37.866	0	0	37.866	0	0	37.866	0	0	37.866	0	44.957	7.017	0	0	37.866	0	0	37.866	0
56.482	0	0	56.482	0	0	56.482	0	0	56.482	0	50.657	10.466	0	0	56.482	0	0	56.482	0
74.887	0	0	74.887	0	0	74.887	0	0	74.887	0	56.117	13.876	0	0	74.887	0	0	74.887	0
93.081	0	0	93.081	0	0	93.081	0	0	93.081	0	61.335	17.248	0	0	93.081	0	0	93.081	0
111.063	0	0	111.063	0	0	111.063	0	0	111.063	0	66.311	20.58	0	0	111.063	0	0	111.063	0
188.899	0	0	188.899	0	0	188.899	0	0	188.899	0	89.732	35.003	0	0	188.899	0	0	188.899	0
223.17	0	0	223.17	0	0	223.17	0	0	223.17	0	89.802	41.353	0	0	223.17	0	0	223.17	0
255.419	0	0	255.419	0	0	255.419	0	0	255.419	0	89.873	47.329	0	0	255.419	0	0	255.419	0
285.644	0	0	285.644	0	0	285.644	0	0	285.644	0	89.943	52.929	0	0	285.644	0	0	285.644	0
313.847	0	0	313.847	0	0	313.847	0	0	313.847	0	90.014	58.155	0	0	313.847	0	0	313.847	0
340.027	0	0	340.027	0	0	340.027	0	0	340.027	0	90.084	63.006	0	0	340.027	0	0	340.027	0
364.184	0	0	364.184	0	0	364.184	0	0	364.184	0	90.155	67.483	0	0	364.184	0	0	364.184	0
386.319	0	0	386.319	0	0	386.319	0	0	386.319	0	90.225	71.584	0	0	386.319	0	0	386.319	0
406.43	0	0	406.43	0	0	406.43	0	0	406.43	0	90.296	75.311	0	0	406.43	0	0	406.43	0
424.519	0	0	424.519	0	0	424.519	0	0	424.519	0	90.366	78.663	0	0	424.519	0	0	424.519	0
440.586	0	0	440.586	0	0	440.586	0	0	440.585	0	90.437	81.64	0	0	440.585	0	0	440.586	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
22.70105	0	0	0	0	0	0	0	0	0	0	555.1866	56.73514	0	0	0	0	0	170.0198	0
70.56904	0	0	0	0	0	0	0	0	0	0	939.0091	176.3593	0	0	0	0	0	528.5275	0
139.9821	0	0	0	0	0	0	0	0	0	0	1079.194	349.8438	0	0	0	0	0	1048.397	0
224.6401	0	0	0	0	0	0	0	0	0	0	1308.266	561.381	0	0	0	0	0	1682.445	0
191.3034	0	0	0	0	0	0	0	0	0	0	930.8719	478.0575	0	0	0	0	0	1432.769	0
236.2314	0	0	0	0	0	0	0	0	0	0	1010.798	590.3575	0	0	0	0	0	1769.258	0
205.2902	0	0	0	0	0	0	0	0	0	0	795.9093	513.0312	0	0	0	0	0	1537.523	0
340.0703	0	0	0	0	0	0	0	0	0	0	1048.976	849.8534	0	0	0	0	0	2546.96	0
638.7637	0	0	0	0	0	0	0	0	0	0	1669.051	1596.288	0	0	0	0	0	4784.028	0
604.0619	0	0	0	0	0	0	0	0	0	0	1380.183	1509.577	0	0	0	0	0	4524.128	0
395.2717	0	0	0	0	0	0	0	0	0	0	808.197	987.7885	0	0	0	0	0	2960.391	0
434.2987	0	0	0	0	0	0	0	0	0	0	808.835	1085.319	0	0	0	0	0	3252.685	0
478.5396	0	0	0	0	0	0	0	0	0	0	823.2494	1195.876	0	0	0	0	0	3584.027	0
508.585	0	0	0	0	0	0	0	0	0	0	817.5452	1270.974	0	0	0	0	0	3809.052	0
541.0335	0	0	0	0	0	0	0	0	0	0	820.5108	1352.053	0	0	0	0	0	4052.076	0
569.1987	0	0	0	0	0	0	0	0	0	0	821.1565	1422.447	0	0	0	0	0	4263.019	0
594.532	0	0	0	0	0	0	0	0	0	0	821.793	1485.759	0	0	0	0	0	4452.754	0
617.3297	0	0	0	0	0	0	0	0	0	0	822.8333	1542.727	0	0	0	0	0	4623.497	0
6812.402	0	0	0	0	0	0	0	0	0	0	17261.57	17024.43	0	0	0	0	0	51021.56	0
15.01878	0	0	0	0	0	0	0	0	0	0	38.05524	37.53244	0	0	0	0	0	112.4833	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.007	0	0	0.022	0	0	0.013	0	0	0.027	0	0.09	0.013	0	0	0.013	0	0	0.005	0
0.013	0	0	0.044	0	0	0.026	0	0	0.053	0	0.089	0.025	0	0	0.025	0	0	0.01	0
0.025	0	0	0.083	0	0	0.049	0	0	0.1	0	0.09	0.047	0	0	0.048	0	0	0.018	0
0.036	0	0	0.118	0	0	0.07	0	0	0.142	0	0.094	0.066	0	0	0.067	0	0	0.026	0
0.045	0	0	0.148	0	0	0.088	0	0	0.179	0	0.101	0.083	0	0	0.085	0	0	0.033	0
0.053	0	0	0.173	0	0	0.103	0	0	0.21	0	0.111	0.098	0	0	0.099	0	0	0.039	0
0.059	0	0	0.194	0	0	0.116	0	0	0.235	0	0.116	0.109	0	0	0.111	0	0	0.043	0
0.072	0	0	0.236	0	0	0.14	0	0	0.285	0	0.129	0.134	0	0	0.135	0	0	0.053	0
0.076	0	0	0.25	0	0	0.149	0	0	0.303	0	0.141	0.141	0	0	0.144	0	0	0.056	0
0.081	0	0	0.264	0	0	0.157	0	0	0.32	0	0.152	0.149	0	0	0.152	0	0	0.059	0
0.085	0	0	0.278	0	0	0.165	0	0	0.336	0	0.163	0.157	0	0	0.159	0	0	0.062	0
0.089	0	0	0.291	0	0	0.173	0	0	0.352	0	0.175	0.164	0	0	0.167	0	0	0.065	0
0.092	0	0	0.303	0	0	0.181	0	0	0.367	0	0.186	0.171	0	0	0.174	0	0	0.068	0
0.096	0	0	0.316	0	0	0.188	0	0	0.382	0	0.198	0.178	0	0	0.181	0	0	0.07	0
0.1	0	0	0.327	0	0	0.195	0	0	0.396	0	0.209	0.185	0	0	0.188	0	0	0.073	0
0.103	0	0	0.338	0	0	0.202	0	0	0.409	0	0.221	0.191	0	0	0.194	0	0	0.075	0
0.106	0	0	0.349	0	0	0.208	0	0	0.422	0	0.232	0.197	0	0	0.2	0	0	0.078	0
0.11	0	0	0.359	0	0	0.214	0	0	0.435	0	0.243	0.203	0	0	0.206	0	0	0.08	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.016646	0	0	0	0	0	0	0	0	0	0	1.389781	0.416934	0	0	0	0	0	0.089053	0
0.048185	0	0	0	0	0	0	0	0	0	0	2.142098	1.249711	0	0	0	0	0	0.277603	0
0.092419	0	0	0	0	0	0	0	0	0	0	2.160453	2.34326	0	0	0	0	0	0.498367	0
0.143179	0	0	0	0	0	0	0	0	0	0	2.427641	3.540144	0	0	0	0	0	0.774469	0
0.114955	0	0	0	0	0	0	0	0	0	0	1.675394	2.859526	0	0	0	0	0	0.631369	0
0.134509	0	0	0	0	0	0	0	0	0	0	1.829275	3.354304	0	0	0	0	0	0.741301	0
0.109056	0	0	0	0	0	0	0	0	0	0	1.39231	2.717221	0	0	0	0	0	0.595279	0
0.12962	0	0	0	0	0	0	0	0	0	0	1.508023	3.253445	0	0	0	0	0	0.714609	0
0.217529	0	0	0	0	0	0	0	0	0	0	2.620613	5.442811	0	0	0	0	0	1.200455	0
0.191564	0	0	0	0	0	0	0	0	0	0	2.33427	4.752413	0	0	0	0	0	1.045042	0
0.117622	0	0	0	0	0	0	0	0	0	0	1.464662	2.930016	0	0	0	0	0	0.642563	0
0.123157	0	0	0	0	0	0	0	0	0	0	1.57249	3.060653	0	0	0	0	0	0.673655	0
0.129477	0	0	0	0	0	0	0	0	0	0	1.699796	3.24564	0	0	0	0	0	0.716749	0
0.134065	0	0	0	0	0	0	0	0	0	0	1.795507	3.35245	0	0	0	0	0	0.73214	0
0.140048	0	0	0	0	0	0	0	0	0	0	1.900657	3.494214	0	0	0	0	0	0.765693	0
0.14425	0	0	0	0	0	0	0	0	0	0	2.009785	3.60754	0	0	0	0	0	0.78667	0
0.148451	0	0	0	0	0	0	0	0	0	0	2.10982	3.720866	0	0	0	0	0	0.818137	0
0.154127	0	0	0	0	0	0	0	0	0	0	2.210915	3.836032	0	0	0	0	0	0.839518	0
2.288862	0	0	0	0	0	0	0	0	0	0	34.24349	57.17718	0	0	0	0	0	12.54267	0
0.005046	0	0	0	0	0	0	0	0	0	0	0.075494	0.126054	0	0	0	0	0	0.027652	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.464	0	0	2.213	0	0	1.1	0	0	2.421	0	0.264	0.091	0	0	0.939	0	0	0.369	0
0.7	0	0	3.334	0	0	1.658	0	0	3.648	0	0.287	0.137	0	0	1.415	0	0	0.556	0
1.113	0	0	5.303	0	0	2.637	0	0	5.803	0	0.329	0.219	0	0	2.251	0	0	0.885	0
1.449	0	0	6.908	0	0	3.435	0	0	7.559	0	0.365	0.285	0	0	2.932	0	0	1.153	0
1.709	0	0	8.148	0	0	4.052	0	0	8.916	0	0.395	0.336	0	0	3.458	0	0	1.359	0
1.893	0	0	9.023	0	0	4.487	0	0	9.874	0	0.42	0.372	0	0	3.83	0	0	1.505	0
2	0	0	9.534	0	0	4.741	0	0	10.433	0	0.44	0.393	0	0	4.047	0	0	1.591	0
2.009	0	0	9.576	0	0	4.763	0	0	10.479	0	0.441	0.394	0	0	4.065	0	0	1.598	0
2.002	0	0	9.541	0	0	4.745	0	0	10.44	0	0.43	0.393	0	0	4.05	0	0	1.592	0
1.99	0	0	9.487	0	0	4.718	0	0	10.381	0	0.416	0.391	0	0	4.027	0	0	1.583	0
1.975	0	0	9.415	0	0	4.682	0	0	10.302	0	0.399	0.388	0	0	3.996	0	0	1.571	0
1.956	0	0	9.324	0	0	4.637	0	0	10.203	0	0.378	0.384	0	0	3.958	0	0	1.556	0
1.933	0	0	9.215	0	0	4.583	0	0	10.083	0	0.354	0.38	0	0	3.911	0	0	1.537	0
1.906	0	0	9.087	0	0	4.519	0	0	9.943	0	0.326	0.375	0	0	3.857	0	0	1.516	0
1.876	0	0	8.94	0	0	4.446	0	0	9.782	0	0.295	0.368	0	0	3.795	0	0	1.492	0
1.841	0	0	8.775	0	0	4.364	0	0	9.602	0	0.261	0.362	0	0	3.724	0	0	1.464	0
1.802	0	0	8.591	0	0	4.272	0	0	9.4	0	0.223	0.354	0	0	3.646	0	0	1.433	0
1.76	0	0	8.388	0	0	4.172	0	0	9.179	0	0.182	0.346	0	0	3.561	0	0	1.4	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.05377	0	0	0	0	0	0	0	0	0	0	0.198658	0.142221	0	0	0	0	0	0.32026	0
0.126435	0	0	0	0	0	0	0	0	0	0	0.336612	0.333725	0	0	0	0	0	0.752137	0
0.200501	0	0	0	0	0	0	0	0	0	0	0.384855	0.532066	0	0	0	0	0	1.194038	0
0.28083	0	0	0	0	0	0	0	0	0	0	0.459354	0.744938	0	0	0	0	0	1.673626	0
0.212744	0	0	0	0	0	0	0	0	0	0	0.319294	0.564097	0	0	0	0	0	1.267032	0
0.234113	0	0	0	0	0	0	0	0	0	0	0.33729	0.620466	0	0	0	0	0	1.394007	0
0.180147	0	0	0	0	0	0	0	0	0	0	0.257353	0.477408	0	0	0	0	0	1.073299	0
0.176245	0	0	0	0	0	0	0	0	0	0	0.251221	0.466158	0	0	0	0	0	1.049948	0
0.279233	0	0	0	0	0	0	0	0	0	0	0.389449	0.739256	0	0	0	0	0	1.663027	0
0.22934	0	0	0	0	0	0	0	0	0	0	0.311314	0.607719	0	0	0	0	0	1.366347	0
0.133179	0	0	0	0	0	0	0	0	0	0	0.174711	0.352858	0	0	0	0	0	0.793412	0
0.131898	0	0	0	0	0	0	0	0	0	0	0.165516	0.349221	0	0	0	0	0	0.785836	0
0.132567	0	0	0	0	0	0	0	0	0	0	0.157647	0.351468	0	0	0	0	0	0.78946	0
0.129707	0	0	0	0	0	0	0	0	0	0	0.144058	0.344169	0	0	0	0	0	0.77267	0
0.128029	0	0	0	0	0	0	0	0	0	0	0.130731	0.338707	0	0	0	0	0	0.762604	0
0.125641	0	0	0	0	0	0	0	0	0	0	0.115664	0.333185	0	0	0	0	0	0.748292	0
0.122979	0	0	0	0	0	0	0	0	0	0	0.098824	0.325821	0	0	0	0	0	0.732447	0
0.12017	0	0	0	0	0	0	0	0	0	0	0.080693	0.318611	0	0	0	0	0	0.715923	0
2.997529	0	0	0	0	0	0	0	0	0	0	4.313244	7.942095	0	0	0	0	0	17.85437	0
0.006608	0	0	0	0	0	0	0	0	0	0	0.009509	0.017509	0	0	0	0	0	0.039362	0

Pollutant Name: Carbon Dioxide Temperature: 80F Relative Humidity: 70%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4776.899
5	0	1088.635	345.72	1088.604	0	1366.848	345.72	1363.175	0	1395.46	345.72	1395.386	0	1898.67	345.72	1898.092	0	2513.51
10	0	810.155	345.72	810.136	0	1017.67	345.72	1015.253	0	1038.973	345.72	1038.925	0	1413.643	345.72	1413.246	0	1672.267
15	0	630.541	345.72	630.53	0	792.237	345.72	790.631	0	808.821	345.72	808.788	0	1100.498	345.72	1100.217	0	1175.484
20	0	511.913	345.72	511.906	0	643.24	345.72	642.17	0	656.705	345.72	656.683	0	893.527	345.72	893.323	0	873
25	0	432.888	345.72	432.884	0	543.927	345.72	543.214	0	555.313	345.72	555.298	0	755.571	345.72	755.419	0	685.012
30	0	380.913	345.72	380.912	0	478.569	345.72	478.091	0	488.587	345.72	488.577	0	664.781	345.72	664.662	0	567.895
35	0	348.479	345.72	348.479	0	437.751	345.72	437.42	0	446.914	345.72	446.907	0	608.079	345.72	607.981	0	497.421
40	0	331.142	345.72	331.143	0	415.898	345.72	415.645	0	424.604	345.72	424.598	0	577.721	345.72	577.635	0	460.326
45	0	326.456	345.72	326.456	0	409.944	345.72	409.713	0	418.525	345.72	418.52	0	569.449	345.72	569.366	0	450.085
50	0	333.414	345.72	333.414	0	418.636	345.72	418.374	0	427.399	345.72	427.393	0	581.523	345.72	581.435	0	464.953
55	0	352.232	345.72	352.231	0	442.261	345.72	441.914	0	451.519	345.72	451.511	0	614.341	345.72	614.241	0	507.469
60	0	384.408	345.72	384.406	0	482.726	345.72	482.233	0	492.831	345.72	492.82	0	670.553	345.72	670.432	0	585.19
65	0	433.111	345.72	433.108	0	544.048	345.72	543.335	0	555.436	345.72	555.422	0	755.739	345.72	755.586	0	712.968

Pollutant Name: Methane Temperature: 80F Relative Humidity: 70%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.891
5	0	0.031	0.008	0.031	0	0.034	0.008	0.034	0	0.057	0.009	0.057	0	0.063	0.007	0.063	0	0.032
10	0	0.022	0.007	0.022	0	0.025	0.006	0.025	0	0.043	0.007	0.043	0	0.048	0.006	0.048	0	0.022
15	0	0.015	0.005	0.015	0	0.018	0.005	0.018	0	0.03	0.006	0.03	0	0.035	0.005	0.035	0	0.015
20	0	0.011	0.004	0.011	0	0.013	0.004	0.013	0	0.022	0.005	0.022	0	0.026	0.004	0.026	0	0.011
25	0	0.009	0.004	0.009	0	0.01	0.004	0.01	0	0.018	0.004	0.018	0	0.02	0.003	0.02	0	0.008
30	0	0.007	0.003	0.007	0	0.009	0.003	0.009	0	0.014	0.003	0.014	0	0.017	0.003	0.017	0	0.007
35	0	0.006	0.003	0.006	0	0.007	0.003	0.007	0	0.012	0.003	0.012	0	0.014	0.002	0.014	0	0.005
40	0	0.005	0.002	0.005	0	0.007	0.002	0.007	0	0.011	0.003	0.011	0	0.013	0.002	0.013	0	0.005
45	0	0.005	0.002	0.005	0	0.006	0.002	0.006	0	0.01	0.002	0.01	0	0.012	0.002	0.012	0	0.004
50	0	0.005	0.002	0.005	0	0.006	0.002	0.006	0	0.01	0.002	0.01	0	0.012	0.002	0.012	0	0.004
55	0	0.005	0.002	0.005	0	0.006	0.002	0.006	0	0.011	0.002	0.011	0	0.013	0.002	0.013	0	0.004
60	0	0.006	0.002	0.006	0	0.007	0.002	0.007	0	0.012	0.002	0.012	0	0.014	0.002	0.014	0	0.004
65	0	0.007	0.002	0.007	0	0.008	0.002	0.008	0	0.013	0.002	0.013	0	0.016	0.002	0.016	0	0.004

Pollutant Name: Oxides of Nitrogen Temperature: 80F Relative Humidity: 70%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.383
5	0	0.052	1.794	0.052	0	0.069	1.802	0.075	0	0.117	1.787	0.117	0	0.134	1.82	0.134	0	0.078
10	0	0.045	1.489	0.045	0	0.059	1.495	0.065	0	0.101	1.483	0.101	0	0.116	1.51	0.116	0	0.081
15	0	0.04	1.28	0.04	0	0.052	1.285	0.057	0	0.09	1.274	0.09	0	0.102	1.298	0.103	0	0.085
20	0	0.036	1.14	0.036	0	0.047	1.145	0.051	0	0.081	1.135	0.081	0	0.092	1.156	0.092	0	0.089
25	0	0.033	1.052	0.033	0	0.043	1.056	0.047	0	0.074	1.048	0.074	0	0.084	1.067	0.084	0	0.093
30	0	0.031	1.006	0.031	0	0.04	1.01	0.044	0	0.069	1.002	0.069	0	0.078	1.02	0.079	0	0.097
35	0	0.03	0.997	0.03	0	0.038	1.001	0.042	0	0.065	0.993	0.065	0	0.074	1.011	0.075	0	0.101
40	0	0.028	1.023	0.029	0	0.037	1.027	0.04	0	0.063	1.019	0.063	0	0.072	1.038	0.072	0	0.105
45	0	0.028	1.088	0.028	0	0.036	1.093	0.04	0	0.062	1.084	0.062	0	0.071	1.104	0.071	0	0.109
50	0	0.028	1.199	0.028	0	0.036	1.204	0.041	0	0.062	1.195	0.062	0	0.071	1.217	0.071	0	0.113
55	0	0.028	1.37	0.028	0	0.037	1.375	0.042	0	0.063	1.364	0.063	0	0.073	1.389	0.073	0	0.117
60	0	0.029	1.621	0.029	0	0.039	1.627	0.044	0	0.066	1.614	0.066	0	0.076	1.644	0.076	0	0.121
65	0	0.031	1.987	0.031	0	0.041	1.995	0.048	0	0.07	1.979	0.07	0	0.08	2.016	0.081	0	0.125

LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT
4098	4646.238	0	4776.9	4098	4487.951	0	4776.9	4098	4218.425	0	0	6617.134	6534.798	0	4776.9	4098	4231.712	0	0
519.048	2129.654	0	2513.51	519.569	1664.862	0	2513.51	1505	1683.892	0	2513.51	3845.361	3828.789	0	2513.51	1505	1703.63	0	2513.51
519.048	1450.318	0	1672.267	519.569	1181.663	0	1672.267	1505	1534.67	0	1672.267	3165.446	3146.866	0	1672.267	1505	1537.944	0	1672.267
519.048	1049.146	0	1175.484	519.569	896.318	0	1175.484	1505	1446.55	0	1175.484	2595.958	2578.283	0	1175.484	1505	1440.101	0	1175.484
519.048	804.878	0	873	519.569	722.575	0	873	1505	1392.894	0	873	2183.16	2166.858	0	873	1505	1380.525	0	873
519.048	653.07	0	685.012	519.569	614.597	0	685.012	1505	1359.548	0	685.012	2042.684	2025.791	0	685.012	1505	1343.5	0	685.012
519.048	558.493	0	567.895	519.569	547.327	0	567.895	1505	1338.774	0	567.895	1924.234	1907.357	0	567.895	1505	1320.433	0	567.895
519.048	501.583	0	497.421	519.569	506.847	0	497.421	1505	1326.273	0	497.421	1827.808	1811.254	0	497.421	1505	1306.553	0	497.421
519.048	471.628	0	460.326	519.569	485.541	0	460.326	1505	1319.693	0	460.326	1753.407	1737.317	0	460.326	1505	1299.247	0	460.326
519.048	463.357	0	450.085	519.569	479.658	0	450.085	1505	1317.876	0	450.085	1701.03	1685.465	0	450.085	1505	1297.23	0	450.085
519.048	475.364	0	464.953	519.569	488.198	0	464.953	1505	1320.514	0	464.953	1670.679	1655.676	0	464.953	1505	1300.159	0	464.953
519.048	509.698	0	507.469	519.569	512.619	0	507.469	1505	1328.055	0	507.469	1662.352	1647.982	0	507.469	1505	1308.532	0	507.469
519.048	572.46	0	585.19	519.569	557.261	0	585.19	1505	1341.842	0	585.19	1676.049	1662.476	0	585.19	1505	1323.84	0	585.19
519.048	675.646	0	712.968	519.569	630.655	0	712.968	1505	1364.507	0	712.968	1711.772	1699.344	0	712.968	1505	1349.006	0	712.968

LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT
0.147	0.748	0	0.893	0.147	0.576	0	0.892	0.147	0.28	0	0	0.36	0.356	0	0.872	0.147	0.29	0	0
0.011	0.028	0	0.03	0.01	0.021	0	0.044	0.014	0.019	0	0.241	0.111	0.113	0	0.066	0.012	0.023	0	0.152
0.009	0.019	0	0.02	0.008	0.015	0	0.029	0.011	0.014	0	0.193	0.061	0.062	0	0.047	0.01	0.017	0	0.107
0.007	0.014	0	0.014	0.007	0.011	0	0.02	0.009	0.011	0	0.163	0.029	0.031	0	0.035	0.008	0.013	0	0.078
0.006	0.01	0	0.01	0.005	0.008	0	0.015	0.007	0.008	0	0.142	0.017	0.019	0	0.028	0.006	0.01	0	0.059
0.005	0.008	0	0.007	0.005	0.006	0	0.011	0.006	0.007	0	0.127	0.015	0.016	0	0.023	0.005	0.009	0	0.047
0.004	0.006	0	0.006	0.004	0.005	0	0.009	0.005	0.006	0	0.115	0.013	0.014	0	0.019	0.005	0.007	0	0.039
0.004	0.005	0	0.005	0.003	0.004	0	0.007	0.004	0.005	0	0.105	0.011	0.012	0	0.017	0.004	0.007	0	0.033
0.003	0.004	0	0.004	0.003	0.004	0	0.006	0.004	0.004	0	0.098	0.01	0.011	0	0.016	0.004	0.006	0	0.029
0.003	0.004	0	0.003	0.003	0.003	0	0.006	0.004	0.004	0	0.093	0.009	0.01	0	0.014	0.003	0.005	0	0.026
0.003	0.004	0	0.003	0.003	0.003	0	0.005	0.003	0.004	0	0.089	0.008	0.009	0	0.014	0.003	0.005	0	0.025
0.003	0.003	0	0.003	0.003	0.003	0	0.005	0.003	0.004	0	0.087	0.007	0.008	0	0.013	0.003	0.005	0	0.024
0.003	0.003	0	0.003	0.002	0.003	0	0.005	0.003	0.003	0	0.086	0.007	0.008	0	0.013	0.003	0.005	0	0.024
0.003	0.004	0	0.003	0.002	0.003	0	0.005	0.003	0.004	0	0.088	0.007	0.008	0	0.014	0.003	0.005	0	0.024

LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT
75.051	15.561	0	1.387	75.051	32.739	0	1.385	75.051	61.984	0	0	123.233	121.7	0	1.352	75.051	60.536	0	0
1.51	0.353	0	0.062	1.414	0.637	0	0.094	1.588	1.323	0	2.495	5.79	5.749	0	0.363	1.372	1.173	0	1.637
1.253	0.307	0	0.065	1.173	0.536	0	0.099	1.318	1.101	0	2.622	4.33	4.309	0	0.382	1.138	0.989	0	1.719
1.077	0.276	0	0.068	1.008	0.468	0	0.104	1.133	0.95	0	2.748	3.293	3.286	0	0.4	0.978	0.864	0	1.802
0.959	0.257	0	0.071	0.898	0.423	0	0.109	1.009	0.849	0	2.875	2.69	2.693	0	0.419	0.871	0.782	0	1.885
0.885	0.246	0	0.074	0.829	0.395	0	0.114	0.931	0.786	0	3.001	2.422	2.43	0	0.437	0.804	0.732	0	1.968
0.847	0.241	0	0.077	0.792	0.382	0	0.118	0.89	0.753	0	3.128	2.197	2.209	0	0.456	0.769	0.707	0	2.051
0.839	0.243	0	0.081	0.785	0.38	0	0.123	0.882	0.747	0	3.254	2.015	2.031	0	0.474	0.762	0.705	0	2.134
0.861	0.251	0	0.084	0.806	0.391	0	0.128	0.906	0.768	0	3.381	1.876	1.895	0	0.492	0.782	0.725	0	2.217
0.916	0.264	0	0.087	0.857	0.415	0	0.133	0.963	0.816	0	3.507	1.78	1.801	0	0.511	0.832	0.769	0	2.3
1.01	0.285	0	0.09	0.945	0.454	0	0.138	1.062	0.898	0	3.634	1.727	1.75	0	0.529	0.917	0.841	0	2.383
1.153	0.316	0	0.093	1.079	0.513	0	0.142	1.212	1.023	0	3.76	1.716	1.742	0	0.548	1.047	0.949	0	2.466
1.364	0.36	0	0.096	1.277	0.599	0	0.147	1.434	1.206	0	3.887	1.749	1.775	0	0.566	1.239	1.106	0	2.549
1.673	0.423	0	0.099	1.565	0.723	0	0.152	1.759	1.474	0	4.013	1.824	1.851	0	0.585	1.519	1.335	0	2.632

UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	4776.899	4098	4153.089	0	0	0	0	0	145.252	6090.987	867.791
2331.299	2433.774	232.649	282.826	0	266.251	0	2513.51	1505	1586.836	0	2513.51	1505	2421.188	232.649	1342.953	3333.16	1581.476
2331.299	1960.664	199.04	233.259	0	221.955	0	1672.267	1505	1518.573	0	1672.267	1505	1656.955	199.04	992.353	2783.227	1207.632
2331.299	1681.276	172.938	199.381	0	190.646	0	1175.484	1505	1478.262	0	1175.484	1505	1205.649	172.938	767.819	2322.611	955.013
2331.299	1511.161	152.598	176.615	0	168.681	0	873	1505	1453.717	0	873	1505	930.855	152.598	620.43	1988.729	785.345
2331.299	1405.438	136.747	162.134	0	153.748	0	685.012	1505	1438.462	0	685.011	1505	760.075	136.747	522.729	1875.109	685.966
2331.299	1339.572	124.45	154.266	0	144.417	0	567.895	1505	1428.959	0	567.895	1505	653.679	124.45	458.708	1779.303	618.243
2331.299	1299.938	115.023	152.16	0	139.892	0	497.421	1505	1423.24	0	497.421	1505	589.656	115.023	418.859	1701.311	573.85
2331.299	1279.076	107.965	155.621	0	139.879	0	460.326	1505	1420.23	0	460.326	1505	555.958	107.965	397.594	1641.134	547.899
2331.299	1273.316	102.918	165.082	0	144.548	0	450.085	1505	1419.399	0	450.085	1505	546.654	102.918	391.875	1598.77	537.726
2331.299	1281.678	99.634	181.69	0	154.585	0	464.953	1505	1420.606	0	464.953	1505	560.161	99.634	400.498	1574.221	542.277
2331.299	1305.589	97.957	207.533	0	171.337	0	507.469	1505	1424.056	0	507.469	1505	598.785	97.957	423.828	1567.486	561.873
2331.299	1349.299	97.808	246.084	0	197.104	0	585.19	1505	1430.362	0	585.19	1505	669.391	97.808	463.905	1578.565	598.298
2331.299	1421.16	99.18	302.979	0	235.658	0	712.968	1505	1440.731	0	712.968	1505	785.472	99.18	524.978	1607.458	655.271

UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0.888	0.147	0.207	0	0	0	0	0	0.027	0.318	0.062
0.035	0.101	0.313	0.279	0	0.29	0	0.116	0.046	0.052	0	0.044	0.006	0.04	0.313	0.044	0.093	0.05
0.026	0.071	0.27	0.233	0	0.245	0	0.084	0.036	0.04	0	0.03	0.005	0.027	0.27	0.032	0.051	0.035
0.019	0.052	0.241	0.204	0	0.216	0	0.064	0.029	0.032	0	0.021	0.004	0.019	0.241	0.023	0.025	0.024
0.015	0.04	0.223	0.185	0	0.198	0	0.052	0.024	0.026	0	0.015	0.003	0.014	0.223	0.018	0.015	0.018
0.012	0.032	0.212	0.174	0	0.186	0	0.044	0.02	0.022	0	0.011	0.003	0.011	0.212	0.014	0.013	0.014
0.01	0.026	0.206	0.167	0	0.18	0	0.038	0.017	0.019	0	0.009	0.002	0.008	0.206	0.012	0.011	0.012
0.009	0.022	0.205	0.164	0	0.177	0	0.034	0.015	0.017	0	0.007	0.002	0.007	0.205	0.01	0.01	0.011
0.008	0.02	0.209	0.164	0	0.179	0	0.032	0.013	0.015	0	0.006	0.002	0.006	0.209	0.009	0.009	0.01
0.007	0.018	0.218	0.169	0	0.185	0	0.03	0.012	0.014	0	0.006	0.002	0.005	0.218	0.009	0.008	0.009
0.007	0.017	0.233	0.177	0	0.196	0	0.029	0.011	0.013	0	0.005	0.002	0.005	0.233	0.009	0.007	0.009
0.007	0.017	0.257	0.191	0	0.213	0	0.028	0.011	0.012	0	0.005	0.001	0.005	0.257	0.009	0.007	0.01
0.007	0.017	0.293	0.212	0	0.239	0	0.028	0.011	0.012	0	0.005	0.001	0.005	0.293	0.01	0.006	0.01
0.008	0.017	0.349	0.246	0	0.28	0	0.028	0.011	0.012	0	0.005	0.001	0.005	0.349	0.011	0.006	0.012

UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	1.378	75.051	69.073	0	0	0	0	0	0.042	113.206	13.803
9.499	5.077	0.722	0.906	0	0.845	0	0.57	11.387	10.509	0	0.093	2.427	0.307	0.722	0.091	5.116	0.704
7.266	4.147	0.757	0.832	0	0.807	0	0.599	9.447	8.729	0	0.098	2.014	0.273	0.757	0.081	3.859	0.543
5.843	3.57	0.792	0.776	0	0.781	0	0.628	8.121	7.513	0	0.102	1.731	0.251	0.792	0.073	2.968	0.428
4.939	3.222	0.828	0.735	0	0.766	0	0.657	7.234	6.7	0	0.107	1.542	0.238	0.828	0.067	2.447	0.359
4.389	3.028	0.864	0.707	0	0.759	0	0.686	6.676	6.19	0	0.112	1.423	0.232	0.864	0.063	2.209	0.327
4.101	2.948	0.901	0.69	0	0.76	0	0.715	6.384	5.924	0	0.116	1.361	0.23	0.901	0.06	2.016	0.301
4.028	2.963	0.938	0.683	0	0.768	0	0.744	6.325	5.872	0	0.121	1.348	0.234	0.938	0.058	1.866	0.281
4.159	3.067	0.976	0.687	0	0.782	0	0.772	6.493	6.029	0	0.126	1.384	0.241	0.976	0.057	1.76	0.267
4.514	3.269	1.013	0.7	0	0.803	0	0.801	6.907	6.411	0	0.131	1.472	0.253	1.013	0.057	1.698	0.259
5.151	3.594	1.051	0.723	0	0.831	0	0.83	7.612	7.062	0	0.135	1.622	0.271	1.051	0.057	1.682	0.258
6.179	4.091	1.088	0.757	0	0.866	0	0.859	8.693	8.057	0	0.14	1.853	0.297	1.088	0.059	1.715	0.263
7.793	4.844	1.125	0.804	0	0.91	0	0.888	10.286	9.523	0	0.145	2.192	0.332	1.125	0.061	1.802	0.276
10.331	6.001	1.162	0.866	0	0.964	0	0.917	12.61	11.661	0	0.149	2.688	0.382	1.162	0.064	1.954	0.298

Vehicle Miles Traveled: 186,828

VEHICLE PERCENTAGES

Vehicle Type	Percent	Non-catalyst	Catalyst	Diesel
Light Auto	44.2%	0.0%	100.0%	0.0%
Light Truck < 3,750 lbs	9.9%	0.0%	99.0%	1.0%
Light Truck 3,751-5,750	21.8%	0.0%	100.0%	0.0%
Medium Truck 5,751-8,500	12.1%	0.0%	100.0%	0.0%
Lite-Heavy 8,501-10,000	2.3%	0.0%	82.6%	17.4%
Lite-Heavy 10,001-14,000	0.7%	0.0%	57.1%	42.9%
Med-Heavy 14,001-33,000	1.1%	0.0%	18.2%	81.8%
Heavy-Heavy 33,001-60,000	2.1%	0.0%	0.0%	100.0%
Line Haul > 60,000 lbs	0.0%	0.0%	0.0%	0.0%
Urban Bus	0.0%	0.0%	0.0%	0.0%
Motorcycle	4.0%	32.5%	67.5%	0.0%
School Bus	0.1%	0.0%	0.0%	100.0%
Motorhome	1.7%	0.0%	88.2%	11.8%

CO2 EMISSION FACTORS (grams/mile)

Vehicle Type	EMFAC Type	Non-catalyst	Catalyst	Diesel
Light Auto	LDA	0	380.913	345.72
Light Truck < 3,750 lbs	LDT1	0	478.569	345.72
Light Truck 3,751-5,750	LDT2	0	488.587	345.72
Medium Truck 5,751-8,500	MDV	0	664.781	345.72
Lite-Heavy 8,501-10,000	LHDT1	0	567.895	519.048
Lite-Heavy 10,001-14,000	LHDT2	0	567.895	519.569
Med-Heavy 14,001-33,000	MHDT	0	567.895	1505
Heavy-Heavy 33,001-60,000	HHDT	0	567.895	1924.234
Line Haul > 60,000 lbs	LHV	0	567.895	1505
Urban Bus	UB	0	567.895	2331.299
Motorcycle	MCY	124.45	154.266	0
School Bus	SBUS	0	567.895	1505
Motorhome	MH	0	567.895	1505

METHANE EMISSION FACTORS (grams/mile)

Vehicle Type	EMFAC Type	Non-catalyst	Catalyst	Diesel
Light Auto	LDA	0	0.007	0.003
Light Truck < 3,750 lbs	LDT1	0	0.009	0.003
Light Truck 3,751-5,750	LDT2	0	0.014	0.003
Medium Truck 5,751-8,500	MDV	0	0.017	0.003
Lite-Heavy 8,501-10,000	LHDT1	0	0.007	0.004
Lite-Heavy 10,001-14,000	LHDT2	0	0.006	0.004
Med-Heavy 14,001-33,000	MHDT	0	0.009	0.005
Heavy-Heavy 33,001-60,000	HHDT	0	0.115	0.013
Line Haul > 60,000 lbs	LHV	0	0.019	0.005
Urban Bus	UB	0	0.039	0.01
Motorcycle	MCY	0.206	0.167	0
School Bus	SBUS	0	0.038	0.017
Motorhome	MH	0	0.009	0.002

NOx EMISSION FACTORS (grams/mile)

Vehicle Type	EMFAC Type	Non-catalyst	Catalyst	Diesel
Light Auto	LDA	0	0.031	1.006
Light Truck < 3,750 lbs	LDT1	0	0.04	1.01
Light Truck 3,751-5,750	LDT2	0	0.069	1.002
Medium Truck 5,751-8,500	MDV	0	0.078	1.02
Lite-Heavy 8,501-10,000	LHDT1	0	0.097	0.847
Lite-Heavy 10,001-14,000	LHDT2	0	0.077	0.792
Med-Heavy 14,001-33,000	MHDT	0	0.118	0.89
Heavy-Heavy 33,001-60,000	HHDT	0	3.128	2.197
Line Haul > 60,000 lbs	LHV	0	0.456	0.769
Urban Bus	UB	0	2.051	4.101
Motorcycle	MCY	0.901	0.69	0
School Bus	SBUS	0	0.715	6.384
Motorhome	MH	0	0.116	1.361

CO2 EMISSIONS (grams)

Vehicle Type	Non-catalyst	Catalyst	Diesel
Light Auto	0.00	31,455,051.51	0.00
Light Truck < 3,750 lbs	0.00	8,763,090.34	63,944.33
Light Truck 3,751-5,750	0.00	19,899,434.63	0.00
Medium Truck 5,751-8,500	0.00	15,028,177.13	0.00
Lite-Heavy 8,501-10,000	0.00	2,015,664.58	2,230,374.00
Lite-Heavy 10,001-14,000	0.00	424,076.82	291,501.57
Med-Heavy 14,001-33,000	0.00	212,409.75	2,530,025.07
Heavy-Heavy 33,001-60,000	0.00	0.00	7,549,523.05
Line Haul > 60,000 lbs	0.00	0.00	0.00
Urban Bus	0.00	0.00	0.00
Motorcycle	302,259.94	778,173.29	0.00
School Bus	0.00	0.00	281,176.38
Motorhome	0.00	1,590,845.08	564,039.82
Total (grams)	302,259.94	80,166,923.13	13,510,584.23
Total (pounds)	666.37	176,737.81	29,785.74

Total CO2 Running Emissions (pounds): 207,189.92

METHANE EMISSIONS (grams)

Vehicle Type	Non-catalyst	Catalyst	Diesel
Light Auto	0.00	578.05	0.00
Light Truck < 3,750 lbs	0.00	164.80	0.55
Light Truck 3,751-5,750	0.00	570.20	0.00
Medium Truck 5,751-8,500	0.00	384.31	0.00
Lite-Heavy 8,501-10,000	0.00	24.85	2.99
Lite-Heavy 10,001-14,000	0.00	4.48	2.24
Med-Heavy 14,001-33,000	0.00	3.37	8.41
Heavy-Heavy 33,001-60,000	0.00	0.00	51.00
Line Haul > 60,000 lbs	0.00	0.00	0.00
Urban Bus	0.00	0.00	0.00
Motorcycle	500.33	842.41	0.00
School Bus	0.00	0.00	3.18
Motorhome	0.00	25.21	0.75
Total (grams)	500.33	2,597.66	69.12
Total (pounds)	1.10	5.73	0.15

Total Methane Running Emissions (pounds): 6.98

N2O EMISSIONS (grams)

Vehicle Type	Non-catalyst	Catalyst	Diesel
Light Auto	0.00	124.75	0.00
Light Truck < 3,750 lbs	0.00	35.69	9.10
Light Truck 3,751-5,750	0.00	136.95	0.00
Medium Truck 5,751-8,500	0.00	85.93	0.00
Lite-Heavy 8,501-10,000	0.00	16.78	30.86
Lite-Heavy 10,001-14,000	0.00	2.80	21.65
Med-Heavy 14,001-33,000	0.00	2.15	72.91
Heavy-Heavy 33,001-60,000	0.00	0.00	420.04
Line Haul > 60,000 lbs	0.00	0.00	0.00
Urban Bus	0.00	0.00	0.00
Motorcycle	106.64	169.61	0.00
School Bus	0.00	0.00	58.12
Motorhome	0.00	15.83	24.86
Total (grams)	106.64	590.48	637.54
Total (pounds)	0.24	1.30	1.41

Total N2O Running Emissions (pounds): 2.94

N_2O/NOx Ratio		
N_2O (mg km^{-1})	NOx (mg km^{-1})	N_2O/NOx Ratio
20	700	0.029
30	650	0.046
12	340	0.035
13	250	0.052
12	260	0.046
13	215	0.060
9	140	0.064
15	160	0.094
0.5	35	0.014
2	35	0.057
23	1300	0.018
22	800	0.028
40	1700	0.024
35	950	0.037
80	1700	0.047
120	1200	0.100
35	1400	0.025
43	1000	0.043
18	600	0.030
20	420	0.048
25	550	0.045
25	500	0.050
12	150	0.080
15	150	0.100
4	110	0.036
5	85	0.059
	Average	0.04873

Source: California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

Carbon Dioxide Calculation
Based on URBEMIS 2007 Assumptions and EMFAC 2007 Emission Factors

Minutes since engine shutoff	5	10	20	30	40	50	60	120	180	240	300	360	420	480	540	600	660	720	Total
Home-Work	0.7%	1.0%	1.4%	2.2%	2.6%	2.8%	2.2%	2.6%	6.2%	8.9%	8.6%	8.6%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%	100.0%
Home-Shop	3.3%	9.5%	14.4%	18.3%	12.2%	7.5%	4.2%	3.6%	3.7%	2.1%	2.6%	2.6%	2.6%	2.6%	2.7%	2.7%	2.7%	2.7%	100.0%
Home-Other	6.1%	7.6%	7.8%	7.2%	7.0%	7.9%	6.2%	6.6%	7.2%	4.9%	4.0%	4.0%	4.0%	3.9%	3.9%	3.9%	3.9%	3.9%	100.0%
Commercial Commute	2.6%	5.0%	3.7%	4.2%	4.7%	3.7%	3.0%	3.3%	8.5%	10.8%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.4%	100.0%
Commercial Non-Commute	5.8%	11.3%	7.3%	7.4%	7.7%	5.5%	4.4%	4.4%	12.1%	13.9%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.7%	100.0%
Commercial Customer	9.3%	14.7%	13.2%	14.0%	6.7%	7.1%	5.1%	4.5%	8.8%	6.4%	1.2%	1.2%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	100.0%

Trips	5	10	20	30	40	50	60	120	180	240	300	360	420	480	540	600	660	720	Total
Home-Work	25.43	36.32	50.85	79.91	94.44	101.70	79.91	94.44	225.20	323.26	312.37	312.37	316.00	316.00	316.00	316.00	316.00	316.00	3,632.19
Home-Shop	65.58	188.79	286.16	363.66	242.44	149.04	83.46	71.54	73.53	41.73	51.67	51.67	51.67	51.67	53.65	53.65	53.65	53.65	1,987.21
Home-Other	330.66	411.97	422.81	390.29	379.45	428.23	336.08	357.76	390.29	265.61	216.83	216.83	216.83	211.41	211.41	211.41	211.41	211.41	5,420.68
Commercial Commute	4.36	8.39	6.21	7.05	7.89	6.21	5.03	5.54	14.26	18.12	10.57	10.57	10.57	10.57	10.57	10.57	10.57	10.74	167.82
Commercial Non-Commute	4.87	9.48	6.13	6.21	6.46	4.62	3.69	3.69	10.15	11.66	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.27	83.91
Commercial Customer	756.95	1,196.47	1,074.38	1,139.50	545.33	577.89	415.10	366.27	716.26	520.91	97.67	97.67	105.81	105.81	105.81	105.81	105.81	105.81	8,139.27
Total	1,187.85	1,851.42	1,846.54	1,986.61	1,276.00	1,267.69	923.28	899.24	1,429.68	1,181.31	691.20	691.20	702.98	697.56	699.54	699.54	699.54	699.88	19,431.08

User Input from URBEMIS

Residential Trips	Home-Work %	Home-Shop %	Home-Other %
2,374.31	33%	18%	49%
8,665.77			

Commercial Trips	Commute	Non-Work	Customer
8,391.00	2.0%	1.0%	97.0%

Trip Distribution

Trips	Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
1187.85	5	0	525.0284	0	0	116.4209	1.175969	0	258.9507	0	0	143.7295	0	0	22.56672	4.753764	0	4.747825	3.567105	0
1851.42	10	0	818.3296	0	0	181.4581	1.83291	0	403.6105	0	0	224.0223	0	0	35.17336	7.4094	0	7.400143	5.559827	0
1846.54	20	0	816.1711	0	0	180.9795	1.828075	0	402.5459	0	0	223.4314	0	0	35.08058	7.389857	0	7.380624	5.545162	0
1986.61	30	0	878.0829	0	0	194.7079	1.966747	0	433.0816	0	0	240.3802	0	0	37.74167	7.950425	0	7.940491	5.965798	0
1276.00	40	0	563.9939	0	0	125.0612	1.263244	0	278.1689	0	0	154.3965	0	0	24.24153	5.106569	0	5.100189	3.831841	0
1267.69	50	0	560.3183	0	0	124.2462	1.255012	0	276.3561	0	0	153.3903	0	0	24.08355	5.073289	0	5.066951	3.806869	0
923.28	60	0	408.0909	0	0	90.49093	0.91405	0	201.2756	0	0	111.7172	0	0	17.54052	3.694977	0	3.690361	2.772618	0
899.24	120	0	397.4635	0	0	88.13438	0.890246	0	196.034	0	0	108.8079	0	0	17.08374	3.598753	0	3.594257	2.700414	0
1429.68	180	0	631.9208	0	0	140.1234	1.415388	0	311.6713	0	0	172.9919	0	0	27.16115	5.721599	0	5.714451	4.293344	0
1181.31	240	0	522.1393	0	0	115.7803	1.169498	0	257.5257	0	0	142.9386	0	0	22.44254	4.727605	0	4.721699	3.547476	0
691.20	300	0	305.5124	0	0	67.74495	0.684292	0	150.6826	0	0	83.63573	0	0	13.1315	2.7662	0	2.762744	2.075687	0
691.20	360	0	305.5124	0	0	67.74495	0.684292	0	150.6826	0	0	83.63573	0	0	13.1315	2.7662	0	2.762744	2.075687	0
702.98	420	0	310.7153	0	0	68.89867	0.695946	0	153.2487	0	0	85.06008	0	0	13.35514	2.813309	0	2.809795	2.111037	0
697.56	480	0	308.3194	0	0	68.36738	0.69058	0	152.067	0	0	84.40418	0	0	13.25215	2.791616	0	2.788128	2.094758	0
699.54	540	0	309.1977	0	0	68.56215	0.692547	0	152.5002	0	0	84.64463	0	0	13.28991	2.799569	0	2.796071	2.100726	0
699.54	600	0	309.1977	0	0	68.56215	0.692547	0	152.5002	0	0	84.64463	0	0	13.28991	2.799569	0	2.796071	2.100726	0
699.54	660	0	309.1977	0	0	68.56215	0.692547	0	152.5002	0	0	84.64463	0	0	13.28991	2.799569	0	2.796071	2.100726	0
699.88	720	0	309.3461	0	0	68.59505	0.692879	0	152.5734	0	0	84.68524	0	0	13.29628	2.800912	0	2.797413	2.101734	0
19431		0	8589	0	0	1904	19	0	4236	0	0	2351	0	0	369	78	0	78	58	0

Pollutant Name: Carbon Dioxide

Temperature: 60F
Relative Humidity: ALL

EMISSION FACTOR

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	11.989	0	0	15.093	0	0	15.389	0	0	20.894	0	0	25.679	0	0	25.911	0	0
10	0	13.446	0	0	16.947	0	0	17.282	0	0	23.488	0	0	29.04	0	0	29.184	0	0
20	0	16.852	0	0	21.273	0	0	21.696	0	0	29.529	0	0	36.801	0	0	36.786	0	0
30	0	20.913	0	0	26.424	0	0	26.951	0	0	36.708	0	0	45.946	0	0	45.794	0	0
40	0	25.631	0	0	32.398	0	0	33.046	0	0	45.025	0	0	56.474	0	0	56.209	0	0
50	0	31.005	0	0	39.196	0	0	39.981	0	0	54.481	0	0	68.387	0	0	68.031	0	0
60	0	37.035	0	0	46.819	0	0	47.756	0	0	65.076	0	0	81.683	0	0	81.26	0	0
120	0	86.412	0	0	109.071	0	0	111.24	0	0	151.381	0	0	188.556	0	0	188.552	0	0
180	0	98.071	0	0	123.809	0	0	126.273	0	0	171.864	0	0	214.252	0	0	214.124	0	0
240	0	109.715	0	0	138.523	0	0	141.28	0	0	192.307	0	0	239.856	0	0	239.632	0	0
300	0	121.343	0	0	153.213	0	0	156.263	0	0	212.71	0	0	265.37	0	0	265.078	0	0
360	0	132.956	0	0	167.878	0	0	171.22	0	0	233.073	0	0	290.792	0	0	290.46	0	0
420	0	144.554	0	0	182.519	0	0	186.153	0	0	253.396	0	0	316.122	0	0	315.778	0	0
480	0	156.136	0	0	197.135	0	0	201.06	0	0	273.679	0	0	341.362	0	0	341.034	0	0
540	0	167.703	0	0	211.728	0	0	215.941	0	0	293.922	0	0	366.511	0	0	366.226	0	0
600	0	179.254	0	0	226.296	0	0	230.798	0	0	314.125	0	0	391.568	0	0	391.354	0	0
660	0	190.79	0	0	240.84	0	0	245.63	0	0	334.288	0	0	416.534	0	0	416.419	0	0
720	0	202.311	0	0	255.359	0	0	260.436	0	0	354.411	0	0	441.409	0	0	441.421	0	0

Pollutant Name: Carbon Dioxide Emissions

EMISSIONS (GRAMS/DAY)

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	6294.565	0	0	1757.14	0	0	3984.992	0	0	3003.084	0	0	579.4907	0	0	123.0209	0	0
10	0	11003.26	0	0	3075.17	0	0	6975.197	0	0	5261.837	0	0	1021.434	0	0	215.9658	0	0
20	0	13754.11	0	0	3849.976	0	0	8733.636	0	0	6597.707	0	0	1291.001	0	0	271.5036	0	0
30	0	18363.35	0	0	5144.962	0	0	11671.98	0	0	8823.875	0	0	1734.079	0	0	363.6269	0	0
40	0	14455.73	0	0	4051.732	0	0	9192.37	0	0	6951.703	0	0	1369.016	0	0	286.6765	0	0
50	0	17372.67	0	0	4869.952	0	0	11048.99	0	0	8356.858	0	0	1647.001	0	0	344.7097	0	0
60	0	15113.65	0	0	4236.695	0	0	9612.118	0	0	7270.108	0	0	1432.763	0	0	299.8787	0	0
120	0	34345.61	0	0	9612.905	0	0	21806.82	0	0	16471.45	0	0	3221.241	0	0	677.7043	0	0
180	0	61973.1	0	0	17348.54	0	0	39355.67	0	0	29731.08	0	0	5819.332	0	0	1223.601	0	0
240	0	57286.52	0	0	16038.23	0	0	36383.24	0	0	27488.09	0	0	5382.978	0	0	1131.47	0	0
300	0	37071.79	0	0	10379.41	0	0	23546.11	0	0	17790.16	0	0	3484.707	0	0	732.3427	0	0
360	0	40619.7	0	0	11372.89	0	0	25799.87	0	0	19493.23	0	0	3818.536	0	0	802.4666	0	0
420	0	44915.14	0	0	12575.32	0	0	28527.71	0	0	21553.88	0	0	4221.852	0	0	887.2713	0	0
480	0	48139.76	0	0	13477.6	0	0	30574.6	0	0	23099.65	0	0	4523.782	0	0	950.8465	0	0
540	0	51853.39	0	0	14516.53	0	0	32931.06	0	0	24878.92	0	0	4870.897	0	0	1023.994	0	0
600	0	55424.93	0	0	15515.34	0	0	35196.75	0	0	26588.99	0	0	5203.902	0	0	1094.254	0	0
660	0	58991.84	0	0	16512.51	0	0	37458.64	0	0	28295.68	0	0	5535.698	0	0	1164.337	0	0
720	0	62584.12	0	0	17516.36	0	0	39735.61	0	0	30013.38	0	0	5869.099	0	0	1234.837	0	0
Total (grams/day):	0	649563.2	0	0	181851.3	0	0	412535.4	0	0	311669.7	0	0	61026.81	0	0	12828.51	0	0
Total (lbs/day):	0	1432.042	0	0	400.9134	0	0	909.4848	0	0	687.1141	0	0	134.5411	0	0	28.28201	0	0

Grand Total (lbs/day): 3795.4668

Pollutant Name: Methane

Temperature: 60F
Relative Humidity: ALL

EMISSION FACTOR

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	0	0	0	0	0	0	0.001	0	0	0.001	0	0	0.004	0	0	0.003	0	0
10	0	0.001	0	0	0.001	0	0	0.002	0	0	0.002	0	0	0.007	0	0	0.006	0	0
20	0	0.001	0	0	0.002	0	0	0.003	0	0	0.004	0	0	0.014	0	0	0.012	0	0
30	0	0.002	0	0	0.003	0	0	0.004	0	0	0.006	0	0	0.021	0	0	0.018	0	0
40	0	0.003	0	0	0.003	0	0	0.006	0	0	0.007	0	0	0.027	0	0	0.024	0	0
50	0	0.003	0	0	0.004	0	0	0.007	0	0	0.009	0	0	0.033	0	0	0.029	0	0
60	0	0.004	0	0	0.005	0	0	0.008	0	0	0.011	0	0	0.039	0	0	0.034	0	0
120	0	0.006	0	0	0.007	0	0	0.013	0	0	0.017	0	0	0.062	0	0	0.057	0	0
180	0	0.004	0	0	0.006	0	0	0.01	0	0	0.013	0	0	0.054	0	0	0.049	0	0
240	0	0.005	0	0	0.006	0	0	0.01	0	0	0.014	0	0	0.058	0	0	0.052	0	0
300	0	0.005	0	0	0.006	0	0	0.011	0	0	0.015	0	0	0.061	0	0	0.055	0	0
360	0	0.005	0	0	0.007	0	0	0.012	0	0	0.016	0	0	0.065	0	0	0.058	0	0
420	0	0.006	0	0	0.007	0	0	0.012	0	0	0.016	0	0	0.068	0	0	0.061	0	0
480	0	0.006	0	0	0.007	0	0	0.013	0	0	0.017	0	0	0.071	0	0	0.064	0	0
540	0	0.006	0	0	0.008	0	0	0.013	0	0	0.018	0	0	0.075	0	0	0.068	0	0
600	0	0.006	0	0	0.008	0	0	0.014	0	0	0.019	0	0	0.078	0	0	0.071	0	0
660	0	0.007	0	0	0.008	0	0	0.015	0	0	0.02	0	0	0.081	0	0	0.074	0	0
720	0	0.007	0	0	0.008	0	0	0.015	0	0	0.02	0	0	0.085	0	0	0.077	0	0

Pollutant Name: Methane Emissions

EMISSIONS (GRAMS/DAY)

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	0	0	0	0	0	0	0.258951	0	0	0.143729	0	0	0.090267	0	0	0.014243	0	0
10	0	0.81833	0	0	0.181458	0	0	0.807221	0	0	0.448045	0	0	0.246214	0	0	0.044401	0	0
20	0	0.816171	0	0	0.361959	0	0	1.207638	0	0	0.893726	0	0	0.491128	0	0	0.088567	0	0
30	0	1.756166	0	0	0.584124	0	0	1.732326	0	0	1.442281	0	0	0.792575	0	0	0.142929	0	0
40	0	1.691982	0	0	0.375184	0	0	1.669014	0	0	1.080776	0	0	0.654521	0	0	0.122405	0	0
50	0	1.680955	0	0	0.496985	0	0	1.934493	0	0	1.380513	0	0	0.794757	0	0	0.146942	0	0
60	0	1.632364	0	0	0.452455	0	0	1.610205	0	0	1.228889	0	0	0.68408	0	0	0.125472	0	0
120	0	2.384781	0	0	0.616941	0	0	2.548442	0	0	1.849734	0	0	1.059192	0	0	0.204873	0	0
180	0	2.527683	0	0	0.840741	0	0	3.116713	0	0	2.248894	0	0	1.466702	0	0	0.280008	0	0
240	0	2.610697	0	0	0.694682	0	0	2.575257	0	0	2.00114	0	0	1.301667	0	0	0.245528	0	0
300	0	1.527562	0	0	0.40647	0	0	1.657508	0	0	1.254536	0	0	0.801022	0	0	0.151951	0	0
360	0	1.527562	0	0	0.474215	0	0	1.808191	0	0	1.338172	0	0	0.853548	0	0	0.160239	0	0
420	0	1.864292	0	0	0.482291	0	0	1.838985	0	0	1.360961	0	0	0.908149	0	0	0.171397	0	0
480	0	1.849916	0	0	0.478572	0	0	1.976871	0	0	1.434871	0	0	0.940903	0	0	0.17844	0	0
540	0	1.855186	0	0	0.548497	0	0	1.982503	0	0	1.523603	0	0	0.996743	0	0	0.190133	0	0
600	0	1.855186	0	0	0.548497	0	0	2.135003	0	0	1.608248	0	0	1.036613	0	0	0.198521	0	0
660	0	2.164384	0	0	0.548497	0	0	2.287504	0	0	1.692893	0	0	1.076482	0	0	0.206909	0	0
720	0	2.165423	0	0	0.54876	0	0	2.288601	0	0	1.693705	0	0	1.130184	0	0	0.215401	0	0
Total (grams/day):	0	30.72864	0	0	8.640325	0	0	33.43543	0	0	24.62472	0	0	15.32475	0	0	2.88836	0	0
Total (lbs/day):	0	0.067745	0	0	0.019049	0	0	0.073712	0	0	0.054288	0	0	0.033785	0	0	0.006368	0	0

Grand Total (lbs/day): 0.5314933

Pollutant Name: Oxides of Nitrogen

Temperature: 60F
Humidity: ALL

EMISSION FACTOR

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	0.041	0	0	0.055	0	0	0.111	0	0	0.133	0	0	1.257	0	0	1.19	0	0
10	0	0.044	0	0	0.059	0	0	0.118	0	0	0.141	0	0	1.316	0	0	1.233	0	0
20	0	0.049	0	0	0.065	0	0	0.13	0	0	0.156	0	0	1.425	0	0	1.314	0	0
30	0	0.054	0	0	0.071	0	0	0.14	0	0	0.168	0	0	1.519	0	0	1.386	0	0
40	0	0.057	0	0	0.075	0	0	0.149	0	0	0.179	0	0	1.6	0	0	1.448	0	0
50	0	0.06	0	0	0.079	0	0	0.156	0	0	0.187	0	0	1.665	0	0	1.501	0	0
60	0	0.062	0	0	0.082	0	0	0.161	0	0	0.194	0	0	1.717	0	0	1.544	0	0
120	0	0.067	0	0	0.089	0	0	0.175	0	0	0.21	0	0	1.877	0	0	1.698	0	0
180	0	0.07	0	0	0.092	0	0	0.181	0	0	0.218	0	0	1.89	0	0	1.71	0	0
240	0	0.069	0	0	0.091	0	0	0.18	0	0	0.216	0	0	1.875	0	0	1.697	0	0
300	0	0.068	0	0	0.09	0	0	0.178	0	0	0.214	0	0	1.851	0	0	1.675	0	0
360	0	0.067	0	0	0.088	0	0	0.175	0	0	0.21	0	0	1.817	0	0	1.643	0	0
420	0	0.066	0	0	0.086	0	0	0.171	0	0	0.205	0	0	1.775	0	0	1.603	0	0
480	0	0.064	0	0	0.084	0	0	0.166	0	0	0.199	0	0	1.722	0	0	1.554	0	0
540	0	0.062	0	0	0.081	0	0	0.16	0	0	0.193	0	0	1.661	0	0	1.496	0	0
600	0	0.059	0	0	0.078	0	0	0.154	0	0	0.185	0	0	1.589	0	0	1.429	0	0
660	0	0.056	0	0	0.074	0	0	0.146	0	0	0.176	0	0	1.509	0	0	1.354	0	0
720	0	0.053	0	0	0.07	0	0	0.138	0	0	0.166	0	0	1.419	0	0	1.269	0	0

Pollutant Name: Nitrous Oxide

EMISSIONS (GRAMS/DAY)

Time min	LDA NCAT	LDA CAT	LDA DSL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	MDV NCAT	MDV CAT	MDV DSL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	MHD NCAT
5	0	1.048975	0	0	0.312027	0	0	1.400679	0	0	0.931528	0	0	1.3823	0	0	0.275321	0	0
10	0	1.754605	0	0	0.521707	0	0	2.320828	0	0	1.539249	0	0	2.255632	0	0	0.444633	0	0
20	0	1.948838	0	0	0.573246	0	0	2.5501	0	0	1.698507	0	0	2.436016	0	0	0.472593	0	0
30	0	2.310616	0	0	0.67366	0	0	2.954583	0	0	1.967915	0	0	2.793685	0	0	0.536302	0	0
40	0	1.566563	0	0	0.45707	0	0	2.01973	0	0	1.346756	0	0	1.890073	0	0	0.359876	0	0
50	0	1.638267	0	0	0.478309	0	0	2.100836	0	0	1.397777	0	0	1.954039	0	0	0.370617	0	0
60	0	1.232955	0	0	0.361591	0	0	1.579121	0	0	1.056137	0	0	1.467612	0	0	0.277661	0	0
120	0	1.297689	0	0	0.382238	0	0	1.671737	0	0	1.113469	0	0	1.562592	0	0	0.297403	0	0
180	0	2.155555	0	0	0.628199	0	0	2.748995	0	0	1.837726	0	0	2.501546	0	0	0.476178	0	0
240	0	1.755634	0	0	0.513422	0	0	2.258872	0	0	1.504533	0	0	2.050557	0	0	0.390462	0	0
300	0	1.012363	0	0	0.29711	0	0	1.307018	0	0	0.872176	0	0	1.184457	0	0	0.225504	0	0
360	0	0.997475	0	0	0.290508	0	0	1.284989	0	0	0.855874	0	0	1.1627	0	0	0.221196	0	0
420	0	0.999321	0	0	0.288741	0	0	1.277002	0	0	0.849724	0	0	1.155168	0	0	0.219486	0	0
480	0	0.961566	0	0	0.279851	0	0	1.230103	0	0	0.818494	0	0	1.112034	0	0	0.211136	0	0
540	0	0.934171	0	0	0.270625	0	0	1.18902	0	0	0.796077	0	0	1.075697	0	0	0.203835	0	0
600	0	0.888969	0	0	0.260602	0	0	1.144431	0	0	0.763079	0	0	1.029069	0	0	0.194706	0	0
660	0	0.843768	0	0	0.247238	0	0	1.08498	0	0	0.725956	0	0	0.977259	0	0	0.184487	0	0
720	0	0.798949	0	0	0.233986	0	0	1.026021	0	0	0.685037	0	0	0.919414	0	0	0.172988	0	0
Total (grams/day):	0	24.14628	0	0	7.070128	0	0	31.14905	0	0	20.76002	0	0	28.90985	0	0	5.534383	0	0
Total (lbs/day):	0	0.053233	0	0	0.015587	0	0	0.068672	0	0	0.045768	0	0	0.063735	0	0	0.012201	0	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
2.37807	10.68825	0	0	24.94479	0	0	0	0	0	0	15.44201	32.07187	0	0	0	1.187847	0	17.81058	2.382821
3.706552	16.65912	0	0	38.87991	0	0	0	0	0	0	24.06852	49.98846	0	0	0	1.851424	0	27.76026	3.713957
3.696775	16.61517	0	0	38.77736	0	0	0	0	0	0	24.00503	49.8566	0	0	0	1.846541	0	27.68703	3.704161
3.977199	17.87554	0	0	41.71887	0	0	0	0	0	0	25.82597	53.63855	0	0	0	1.986613	0	29.78727	3.985145
2.554561	11.48149	0	0	26.79609	0	0	0	0	0	0	16.58806	34.45211	0	0	0	1.276004	0	19.13241	2.559665
2.537912	11.40666	0	0	26.62146	0	0	0	0	0	0	16.47995	34.22759	0	0	0	1.267689	0	19.00772	2.542983
1.848412	8.307697	0	0	19.38894	0	0	0	0	0	0	12.00267	24.92863	0	0	0	0.923283	0	13.8437	1.852105
1.800276	8.091349	0	0	18.88401	0	0	0	0	0	0	11.6901	24.27944	0	0	0	0.899239	0	13.48318	1.803873
2.862229	12.86431	0	0	30.02338	0	0	0	0	0	0	18.5859	38.60149	0	0	0	1.429685	0	21.4367	2.867948
2.364984	10.62943	0	0	24.80752	0	0	0	0	0	0	15.35704	31.89539	0	0	0	1.181311	0	17.71257	2.369709
1.383791	6.219457	0	0	14.51529	0	0	0	0	0	0	8.985657	18.66252	0	0	0	0.691204	0	10.36392	1.386556
1.383791	6.219457	0	0	14.51529	0	0	0	0	0	0	8.985657	18.66252	0	0	0	0.691204	0	10.36392	1.386556
1.407358	6.325377	0	0	14.76249	0	0	0	0	0	0	9.138686	18.98035	0	0	0	0.702976	0	10.54042	1.41017
1.396506	6.276602	0	0	14.64866	0	0	0	0	0	0	9.068218	18.83399	0	0	0	0.697555	0	10.45914	1.399296
1.400484	6.294483	0	0	14.69039	0	0	0	0	0	0	9.094051	18.88765	0	0	0	0.699542	0	10.48894	1.403282
1.400484	6.294483	0	0	14.69039	0	0	0	0	0	0	9.094051	18.88765	0	0	0	0.699542	0	10.48894	1.403282
1.400484	6.294483	0	0	14.69039	0	0	0	0	0	0	9.094051	18.88765	0	0	0	0.699542	0	10.48894	1.403282
1.401156	6.297503	0	0	14.69744	0	0	0	0	0	0	9.098415	18.89671	0	0	0	0.699878	0	10.49397	1.403955
39	175	0	0	408	0	0	0	0	0	0	253	525	0	0	0	19	0	291	39

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
9.546	0	0	9.546	0	0	9.546	0	0	9.546	0	35.953	1.769	0	0	9.546	0	0	9.546	0
19.039	0	0	19.039	0	0	19.039	0	0	19.039	0	39.014	3.528	0	0	19.039	0	0	19.039	0
37.866	0	0	37.866	0	0	37.866	0	0	37.866	0	44.957	7.017	0	0	37.866	0	0	37.866	0
56.482	0	0	56.482	0	0	56.482	0	0	56.482	0	50.657	10.466	0	0	56.482	0	0	56.482	0
74.887	0	0	74.887	0	0	74.887	0	0	74.887	0	56.117	13.876	0	0	74.887	0	0	74.887	0
93.081	0	0	93.081	0	0	93.081	0	0	93.081	0	61.335	17.248	0	0	93.081	0	0	93.081	0
111.063	0	0	111.063	0	0	111.063	0	0	111.063	0	66.311	20.58	0	0	111.063	0	0	111.063	0
188.899	0	0	188.899	0	0	188.899	0	0	188.899	0	89.732	35.003	0	0	188.899	0	0	188.899	0
223.17	0	0	223.17	0	0	223.17	0	0	223.17	0	89.802	41.353	0	0	223.17	0	0	223.17	0
255.419	0	0	255.419	0	0	255.419	0	0	255.419	0	89.873	47.329	0	0	255.419	0	0	255.419	0
285.644	0	0	285.644	0	0	285.644	0	0	285.644	0	89.943	52.929	0	0	285.644	0	0	285.644	0
313.847	0	0	313.847	0	0	313.847	0	0	313.847	0	90.014	58.155	0	0	313.847	0	0	313.847	0
340.027	0	0	340.027	0	0	340.027	0	0	340.027	0	90.084	63.006	0	0	340.027	0	0	340.027	0
364.184	0	0	364.184	0	0	364.184	0	0	364.184	0	90.155	67.483	0	0	364.184	0	0	364.184	0
386.319	0	0	386.319	0	0	386.319	0	0	386.319	0	90.225	71.584	0	0	386.319	0	0	386.319	0
406.43	0	0	406.43	0	0	406.43	0	0	406.43	0	90.296	75.311	0	0	406.43	0	0	406.43	0
424.519	0	0	424.519	0	0	424.519	0	0	424.519	0	90.366	78.663	0	0	424.519	0	0	424.519	0
440.586	0	0	440.586	0	0	440.586	0	0	440.585	0	90.437	81.64	0	0	440.585	0	0	440.586	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
22.70105	0	0	0	0	0	0	0	0	0	0	555.1866	56.73514	0	0	0	0	0	170.0198	0
70.56904	0	0	0	0	0	0	0	0	0	0	939.0091	176.3593	0	0	0	0	0	528.5275	0
139.9821	0	0	0	0	0	0	0	0	0	0	1079.194	349.8438	0	0	0	0	0	1048.397	0
224.6401	0	0	0	0	0	0	0	0	0	0	1308.266	561.381	0	0	0	0	0	1682.445	0
191.3034	0	0	0	0	0	0	0	0	0	0	930.8719	478.0575	0	0	0	0	0	1432.769	0
236.2314	0	0	0	0	0	0	0	0	0	0	1010.798	590.3575	0	0	0	0	0	1769.258	0
205.2902	0	0	0	0	0	0	0	0	0	0	795.9093	513.0312	0	0	0	0	0	1537.523	0
340.0703	0	0	0	0	0	0	0	0	0	0	1048.976	849.8534	0	0	0	0	0	2546.96	0
638.7637	0	0	0	0	0	0	0	0	0	0	1669.051	1596.288	0	0	0	0	0	4784.028	0
604.0619	0	0	0	0	0	0	0	0	0	0	1380.183	1509.577	0	0	0	0	0	4524.128	0
395.2717	0	0	0	0	0	0	0	0	0	0	808.197	987.7885	0	0	0	0	0	2960.391	0
434.2987	0	0	0	0	0	0	0	0	0	0	808.835	1085.319	0	0	0	0	0	3252.685	0
478.5396	0	0	0	0	0	0	0	0	0	0	823.2494	1195.876	0	0	0	0	0	3584.027	0
508.585	0	0	0	0	0	0	0	0	0	0	817.5452	1270.974	0	0	0	0	0	3809.052	0
541.0335	0	0	0	0	0	0	0	0	0	0	820.5108	1352.053	0	0	0	0	0	4052.076	0
569.1987	0	0	0	0	0	0	0	0	0	0	821.1565	1422.447	0	0	0	0	0	4263.019	0
594.532	0	0	0	0	0	0	0	0	0	0	821.793	1485.759	0	0	0	0	0	4452.754	0
617.3297	0	0	0	0	0	0	0	0	0	0	822.8333	1542.727	0	0	0	0	0	4623.497	0
6812.402	0	0	0	0	0	0	0	0	0	0	17261.57	17024.43	0	0	0	0	0	51021.56	0
15.01878	0	0	0	0	0	0	0	0	0	0	38.05524	37.53244	0	0	0	0	0	112.4833	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.009	0	0	0.03	0	0	0.018	0	0	0.036	0	0.137	0.018	0	0	0.017	0	0	0.007	0
0.018	0	0	0.058	0	0	0.035	0	0	0.07	0	0.136	0.034	0	0	0.033	0	0	0.013	0
0.034	0	0	0.11	0	0	0.066	0	0	0.133	0	0.137	0.065	0	0	0.063	0	0	0.025	0
0.048	0	0	0.156	0	0	0.093	0	0	0.189	0	0.143	0.092	0	0	0.089	0	0	0.035	0
0.06	0	0	0.196	0	0	0.117	0	0	0.237	0	0.155	0.115	0	0	0.112	0	0	0.044	0
0.07	0	0	0.23	0	0	0.137	0	0	0.278	0	0.17	0.135	0	0	0.132	0	0	0.051	0
0.078	0	0	0.258	0	0	0.153	0	0	0.312	0	0.177	0.152	0	0	0.148	0	0	0.057	0
0.075	0	0	0.246	0	0	0.146	0	0	0.297	0	0.142	0.172	0	0	0.141	0	0	0.055	0
0.079	0	0	0.261	0	0	0.155	0	0	0.315	0	0.155	0.145	0	0	0.149	0	0	0.058	0
0.084	0	0	0.275	0	0	0.164	0	0	0.333	0	0.168	0.153	0	0	0.158	0	0	0.061	0
0.088	0	0	0.289	0	0	0.172	0	0	0.35	0	0.18	0.161	0	0	0.166	0	0	0.064	0
0.092	0	0	0.303	0	0	0.18	0	0	0.366	0	0.193	0.169	0	0	0.174	0	0	0.067	0
0.096	0	0	0.316	0	0	0.188	0	0	0.382	0	0.205	0.176	0	0	0.181	0	0	0.07	0
0.1	0	0	0.328	0	0	0.196	0	0	0.397	0	0.218	0.183	0	0	0.188	0	0	0.073	0
0.104	0	0	0.341	0	0	0.203	0	0	0.412	0	0.231	0.19	0	0	0.195	0	0	0.076	0
0.107	0	0	0.352	0	0	0.21	0	0	0.426	0	0.243	0.197	0	0	0.202	0	0	0.078	0
0.111	0	0	0.363	0	0	0.216	0	0	0.44	0	0.256	0.203	0	0	0.208	0	0	0.081	0
0.114	0	0	0.374	0	0	0.223	0	0	0.453	0	0.268	0.209	0	0	0.215	0	0	0.083	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.021403	0	0	0	0	0	0	0	0	0	0	2.115556	0.577294	0	0	0	0	0	0.124674	0
0.066718	0	0	0	0	0	0	0	0	0	0	3.273318	1.699608	0	0	0	0	0	0.360883	0
0.12569	0	0	0	0	0	0	0	0	0	0	3.288689	3.240679	0	0	0	0	0	0.692176	0
0.190906	0	0	0	0	0	0	0	0	0	0	3.693113	4.934746	0	0	0	0	0	1.042555	0
0.153274	0	0	0	0	0	0	0	0	0	0	2.571149	3.961993	0	0	0	0	0	0.841826	0
0.177654	0	0	0	0	0	0	0	0	0	0	2.801592	4.620725	0	0	0	0	0	0.969394	0
0.144176	0	0	0	0	0	0	0	0	0	0	2.124473	3.789152	0	0	0	0	0	0.789091	0
0.135021	0	0	0	0	0	0	0	0	0	0	1.659995	4.176064	0	0	0	0	0	0.741575	0
0.226116	0	0	0	0	0	0	0	0	0	0	2.880815	5.597217	0	0	0	0	0	1.243328	0
0.198659	0	0	0	0	0	0	0	0	0	0	2.579983	4.879995	0	0	0	0	0	1.080467	0
0.121774	0	0	0	0	0	0	0	0	0	0	1.617418	3.004666	0	0	0	0	0	0.663291	0
0.127309	0	0	0	0	0	0	0	0	0	0	1.734232	3.153966	0	0	0	0	0	0.694383	0
0.135106	0	0	0	0	0	0	0	0	0	0	1.873431	3.340541	0	0	0	0	0	0.737829	0
0.139651	0	0	0	0	0	0	0	0	0	0	1.976871	3.44662	0	0	0	0	0	0.763517	0
0.14565	0	0	0	0	0	0	0	0	0	0	2.100726	3.588653	0	0	0	0	0	0.797159	0
0.149852	0	0	0	0	0	0	0	0	0	0	2.209854	3.720866	0	0	0	0	0	0.818137	0
0.155454	0	0	0	0	0	0	0	0	0	0	2.328077	3.834192	0	0	0	0	0	0.849604	0
0.159732	0	0	0	0	0	0	0	0	0	0	2.438375	3.949412	0	0	0	0	0	0.871	0
2.574142	0	0	0	0	0	0	0	0	0	0	43.26767	65.51639	0	0	0	0	0	14.08089	0
0.005675	0	0	0	0	0	0	0	0	0	0	0.095389	0.144439	0	0	0	0	0	0.031043	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.507	0	0	2.417	0	0	1.202	0	0	2.645	0	0.296	0.1	0	0	1.026	0	0	0.403	0
0.764	0	0	3.642	0	0	1.811	0	0	3.985	0	0.322	0.15	0	0	1.546	0	0	0.608	0
1.215	0	0	5.792	0	0	2.881	0	0	6.338	0	0.369	0.239	0	0	2.459	0	0	0.966	0
1.583	0	0	7.545	0	0	3.752	0	0	8.256	0	0.409	0.311	0	0	3.202	0	0	1.259	0
1.867	0	0	8.899	0	0	4.426	0	0	9.738	0	0.444	0.367	0	0	3.777	0	0	1.485	0
2.068	0	0	9.855	0	0	4.901	0	0	10.784	0	0.472	0.406	0	0	4.183	0	0	1.644	0
2.185	0	0	10.413	0	0	5.179	0	0	11.395	0	0.493	0.429	0	0	4.42	0	0	1.737	0
2.217	0	0	10.569	0	0	5.256	0	0	11.565	0	0.505	0.431	0	0	4.486	0	0	1.763	0
2.209	0	0	10.53	0	0	5.237	0	0	11.522	0	0.493	0.434	0	0	4.47	0	0	1.757	0
2.197	0	0	10.471	0	0	5.207	0	0	11.458	0	0.477	0.432	0	0	4.444	0	0	1.747	0
2.18	0	0	10.391	0	0	5.168	0	0	11.37	0	0.457	0.428	0	0	4.411	0	0	1.734	0
2.159	0	0	10.291	0	0	5.118	0	0	11.26	0	0.433	0.424	0	0	4.368	0	0	1.717	0
2.134	0	0	10.17	0	0	5.058	0	0	11.128	0	0.406	0.419	0	0	4.317	0	0	1.697	0
2.104	0	0	10.028	0	0	4.987	0	0	10.973	0	0.374	0.413	0	0	4.257	0	0	1.673	0
2.07	0	0	9.867	0	0	4.907	0	0	10.796	0	0.339	0.407	0	0	4.188	0	0	1.646	0
2.032	0	0	9.684	0	0	4.816	0	0	10.597	0	0.299	0.399	0	0	4.111	0	0	1.616	0
1.989	0	0	9.481	0	0	4.715	0	0	10.375	0	0.256	0.391	0	0	4.024	0	0	1.582	0
1.942	0	0	9.258	0	0	4.604	0	0	10.13	0	0.209	0.382	0	0	3.93	0	0	1.545	0

MHD CAT	MHD DSL	HHD NCAT	HHD CAT	HHD DSL	OBUS NCAT	OBUS CAT	OBUS DSL	UBUS NCAT	UBUS CAT	UBUS DSL	MCY NCAT	MCY CAT	MCY DSL	SBUS NCAT	SBUS CAT	SBUS DSL	MH NCAT	MH CAT	MH DSL
0.058753	0	0	0	0	0	0	0	0	0	0	0.222738	0.156287	0	0	0	0	0	0.349769	0
0.137995	0	0	0	0	0	0	0	0	0	0	0.377662	0.365392	0	0	0	0	0	0.82248	0
0.218876	0	0	0	0	0	0	0	0	0	0	0.431645	0.580656	0	0	0	0	0	1.303323	0
0.306801	0	0	0	0	0	0	0	0	0	0	0.514729	0.812898	0	0	0	0	0	1.82749	0
0.232412	0	0	0	0	0	0	0	0	0	0	0.358903	0.616141	0	0	0	0	0	1.384505	0
0.255756	0	0	0	0	0	0	0	0	0	0	0.37905	0.677175	0	0	0	0	0	1.522756	0
0.196811	0	0	0	0	0	0	0	0	0	0	0.288352	0.52114	0	0	0	0	0	1.171792	0
0.194493	0	0	0	0	0	0	0	0	0	0	0.287679	0.509935	0	0	0	0	0	1.158359	0
0.308105	0	0	0	0	0	0	0	0	0	0	0.446508	0.81638	0	0	0	0	0	1.835389	0
0.253196	0	0	0	0	0	0	0	0	0	0	0.356964	0.671445	0	0	0	0	0	1.507902	0
0.147003	0	0	0	0	0	0	0	0	0	0	0.200108	0.389236	0	0	0	0	0	0.875733	0
0.145587	0	0	0	0	0	0	0	0	0	0	0.189599	0.385598	0	0	0	0	0	0.867147	0
0.146352	0	0	0	0	0	0	0	0	0	0	0.180804	0.38754	0	0	0	0	0	0.871642	0
0.143181	0	0	0	0	0	0	0	0	0	0	0.165269	0.379045	0	0	0	0	0	0.852689	0
0.141269	0	0	0	0	0	0	0	0	0	0	0.15023	0.374603	0	0	0	0	0	0.841317	0
0.138676	0	0	0	0	0	0	0	0	0	0	0.132503	0.367239	0	0	0	0	0	0.825984	0
0.135741	0	0	0	0	0	0	0	0	0	0	0.113448	0.359876	0	0	0	0	0	0.808605	0
0.132597	0	0	0	0	0	0	0	0	0	0	0.092664	0.351761	0	0	0	0	0	0.790072	0
3.293602	0	0	0	0	0	0	0	0	0	0	4.888855	8.722346	0	0	0	0	0	19.61695	0
0.007261	0	0	0	0	0	0	0	0	0	0	0.010778	0.019229	0	0	0	0	0	0.043248	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 70%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4776.899
5	0	923.614	345.72	923.591	0	1165.958	345.72	1163.008	0	1190.354	345.72	1190.295	0	1619.723	345.72	1619.249	0	2513.51
10	0	697.933	345.72	697.919	0	881.062	345.72	879.136	0	899.497	345.72	899.458	0	1223.95	345.72	1223.624	0	1672.267
15	0	547.385	345.72	547.377	0	691.011	345.72	689.77	0	705.47	345.72	705.445	0	959.937	345.72	959.709	0	1175.484
20	0	445.582	345.72	445.578	0	562.497	345.72	561.717	0	574.266	345.72	574.25	0	781.408	345.72	781.246	0	873
25	0	376.459	345.72	376.458	0	475.237	345.72	474.771	0	485.181	345.72	485.171	0	660.189	345.72	660.072	0	685.012
30	0	330.114	345.72	330.115	0	416.732	345.72	416.477	0	425.452	345.72	425.446	0	578.915	345.72	578.828	0	567.895
35	0	300.446	345.72	300.448	0	379.279	345.72	379.158	0	387.215	345.72	387.212	0	526.886	345.72	526.819	0	497.421
40	0	283.808	345.72	283.81	0	358.275	345.72	358.23	0	365.772	345.72	365.77	0	497.708	345.72	497.651	0	460.326
45	0	278.252	345.72	278.254	0	351.261	345.72	351.241	0	358.611	345.72	358.61	0	487.964	345.72	487.911	0	450.085
50	0	283.144	345.72	283.146	0	357.437	345.72	357.395	0	364.916	345.72	364.915	0	496.543	345.72	496.487	0	464.953
55	0	299.042	345.72	299.044	0	377.507	345.72	377.392	0	385.406	345.72	385.403	0	524.424	345.72	524.357	0	507.469
60	0	327.803	345.72	327.804	0	413.814	345.72	413.569	0	422.473	345.72	422.467	0	574.861	345.72	574.776	0	585.19
65	0	372.949	345.72	372.948	0	470.806	345.72	470.356	0	480.657	345.72	480.648	0	654.033	345.72	653.919	0	712.968

Pollutant Name: Methane Temperature: 60F Relative Humidity: 70%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.891
5	0	0.027	0.008	0.027	0	0.031	0.008	0.031	0	0.052	0.009	0.052	0	0.057	0.007	0.057	0	0.031
10	0	0.019	0.007	0.019	0	0.022	0.006	0.022	0	0.038	0.007	0.038	0	0.043	0.006	0.043	0	0.021
15	0	0.013	0.005	0.013	0	0.016	0.005	0.016	0	0.027	0.006	0.027	0	0.031	0.005	0.031	0	0.015
20	0	0.01	0.004	0.01	0	0.012	0.004	0.012	0	0.02	0.005	0.02	0	0.023	0.004	0.023	0	0.011
25	0	0.008	0.004	0.008	0	0.009	0.004	0.009	0	0.015	0.004	0.015	0	0.018	0.003	0.018	0	0.008
30	0	0.006	0.003	0.006	0	0.008	0.003	0.008	0	0.013	0.003	0.013	0	0.015	0.003	0.015	0	0.006
35	0	0.005	0.003	0.005	0	0.006	0.003	0.006	0	0.011	0.003	0.011	0	0.013	0.002	0.013	0	0.005
40	0	0.005	0.002	0.005	0	0.006	0.002	0.006	0	0.01	0.003	0.01	0	0.012	0.002	0.012	0	0.004
45	0	0.005	0.002	0.005	0	0.006	0.002	0.005	0	0.009	0.002	0.009	0	0.011	0.002	0.011	0	0.004
50	0	0.004	0.002	0.004	0	0.005	0.002	0.005	0	0.009	0.002	0.009	0	0.011	0.002	0.011	0	0.004
55	0	0.005	0.002	0.005	0	0.006	0.002	0.006	0	0.009	0.002	0.009	0	0.011	0.002	0.011	0	0.004
60	0	0.005	0.002	0.005	0	0.006	0.002	0.006	0	0.01	0.002	0.01	0	0.012	0.002	0.012	0	0.004
65	0	0.006	0.002	0.006	0	0.007	0.002	0.007	0	0.012	0.002	0.012	0	0.014	0.002	0.014	0	0.004

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 70%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.383
5	0	0.071	2.081	0.071	0	0.095	2.09	0.102	0	0.161	2.073	0.161	0	0.184	2.111	0.185	0	0.109
10	0	0.062	1.727	0.062	0	0.082	1.734	0.088	0	0.139	1.72	0.14	0	0.159	1.752	0.16	0	0.114
15	0	0.055	1.484	0.055	0	0.072	1.491	0.077	0	0.123	1.478	0.123	0	0.141	1.506	0.141	0	0.12
20	0	0.05	1.322	0.05	0	0.065	1.328	0.07	0	0.111	1.317	0.111	0	0.126	1.341	0.127	0	0.125
25	0	0.046	1.22	0.046	0	0.059	1.225	0.064	0	0.102	1.215	0.102	0	0.116	1.238	0.116	0	0.131
30	0	0.043	1.167	0.043	0	0.055	1.172	0.059	0	0.095	1.162	0.095	0	0.108	1.184	0.108	0	0.136
35	0	0.04	1.156	0.041	0	0.053	1.161	0.057	0	0.09	1.151	0.09	0	0.102	1.173	0.103	0	0.142
40	0	0.039	1.187	0.039	0	0.051	1.192	0.055	0	0.087	1.182	0.087	0	0.099	1.204	0.099	0	0.147
45	0	0.038	1.262	0.038	0	0.05	1.268	0.054	0	0.085	1.257	0.086	0	0.097	1.281	0.098	0	0.153
50	0	0.038	1.391	0.038	0	0.05	1.397	0.055	0	0.086	1.386	0.086	0	0.098	1.411	0.098	0	0.158
55	0	0.039	1.589	0.039	0	0.051	1.596	0.057	0	0.087	1.582	0.087	0	0.1	1.612	0.1	0	0.164
60	0	0.04	1.88	0.04	0	0.053	1.888	0.06	0	0.091	1.872	0.091	0	0.104	1.907	0.105	0	0.169
65	0	0.042	2.305	0.042	0	0.057	2.315	0.065	0	0.096	2.296	0.096	0	0.11	2.338	0.111	0	0.175

LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT
4098	4646.238	0	4776.9	4098	4487.951	0	4776.9	4098	4218.425	0	0	6617.134	6534.798	0	4776.9	4098	4231.712	0	0
519.048	2129.654	0	2513.51	519.569	1664.862	0	2513.51	1505	1683.892	0	2513.51	3845.361	3828.789	0	2513.51	1505	1703.63	0	2513.51
519.048	1450.318	0	1672.267	519.569	1181.663	0	1672.267	1505	1534.67	0	1672.267	3165.446	3146.866	0	1672.267	1505	1537.944	0	1672.267
519.048	1049.146	0	1175.484	519.569	896.318	0	1175.484	1505	1446.55	0	1175.484	2595.958	2578.283	0	1175.484	1505	1440.101	0	1175.484
519.048	804.878	0	873	519.569	722.575	0	873	1505	1392.894	0	873	2183.16	2166.858	0	873	1505	1380.525	0	873
519.048	653.07	0	685.012	519.569	614.597	0	685.012	1505	1359.548	0	685.012	2042.684	2025.791	0	685.012	1505	1343.5	0	685.012
519.048	558.493	0	567.895	519.569	547.327	0	567.895	1505	1338.774	0	567.895	1924.234	1907.357	0	567.895	1505	1320.433	0	567.895
519.048	501.583	0	497.421	519.569	506.847	0	497.421	1505	1326.273	0	497.421	1827.808	1811.254	0	497.421	1505	1306.553	0	497.421
519.048	471.628	0	460.326	519.569	485.541	0	460.326	1505	1319.693	0	460.326	1753.407	1737.317	0	460.326	1505	1299.247	0	460.326
519.048	463.357	0	450.085	519.569	479.658	0	450.085	1505	1317.876	0	450.085	1701.03	1685.465	0	450.085	1505	1297.23	0	450.085
519.048	475.364	0	464.953	519.569	488.198	0	464.953	1505	1320.514	0	464.953	1670.679	1655.676	0	464.953	1505	1300.159	0	464.953
519.048	509.698	0	507.469	519.569	512.619	0	507.469	1505	1328.055	0	507.469	1662.352	1647.982	0	507.469	1505	1308.532	0	507.469
519.048	572.46	0	585.19	519.569	557.261	0	585.19	1505	1341.842	0	585.19	1676.049	1662.476	0	585.19	1505	1323.84	0	585.19
519.048	675.646	0	712.968	519.569	630.655	0	712.968	1505	1364.507	0	712.968	1711.772	1699.344	0	712.968	1505	1349.006	0	712.968

LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT
0.147	0.748	0	0.893	0.147	0.576	0	0.892	0.147	0.28	0	0	0.36	0.356	0	0.872	0.147	0.29	0	0
0.011	0.027	0	0.028	0.01	0.021	0	0.042	0.014	0.019	0	0.235	0.111	0.112	0	0.064	0.012	0.022	0	0.147
0.009	0.018	0	0.019	0.008	0.014	0	0.028	0.011	0.014	0	0.189	0.061	0.062	0	0.046	0.01	0.017	0	0.103
0.007	0.013	0	0.013	0.007	0.01	0	0.02	0.009	0.011	0	0.16	0.029	0.031	0	0.034	0.008	0.013	0	0.075
0.006	0.01	0	0.009	0.005	0.008	0	0.014	0.007	0.008	0	0.14	0.017	0.019	0	0.027	0.006	0.01	0	0.057
0.005	0.007	0	0.007	0.005	0.006	0	0.011	0.006	0.007	0	0.125	0.015	0.016	0	0.022	0.005	0.009	0	0.046
0.004	0.006	0	0.005	0.004	0.005	0	0.008	0.005	0.006	0	0.113	0.013	0.014	0	0.019	0.005	0.007	0	0.038
0.004	0.005	0	0.004	0.003	0.004	0	0.007	0.004	0.005	0	0.104	0.011	0.012	0	0.017	0.004	0.006	0	0.032
0.003	0.004	0	0.004	0.003	0.003	0	0.006	0.004	0.004	0	0.096	0.01	0.011	0	0.015	0.004	0.006	0	0.028
0.003	0.004	0	0.003	0.003	0.003	0	0.005	0.004	0.004	0	0.091	0.009	0.01	0	0.014	0.003	0.005	0	0.026
0.003	0.004	0	0.003	0.003	0.003	0	0.005	0.003	0.004	0	0.087	0.008	0.009	0	0.013	0.003	0.005	0	0.024
0.003	0.003	0	0.003	0.003	0.003	0	0.005	0.003	0.004	0	0.085	0.007	0.008	0	0.013	0.003	0.005	0	0.023
0.003	0.003	0	0.003	0.002	0.003	0	0.005	0.003	0.003	0	0.085	0.007	0.008	0	0.013	0.003	0.005	0	0.023
0.003	0.003	0	0.003	0.002	0.003	0	0.005	0.003	0.003	0	0.086	0.007	0.008	0	0.013	0.003	0.005	0	0.024

LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT
75.051	15.561	0	1.387	75.051	32.739	0	1.385	75.051	61.984	0	0	123.233	121.7	0	1.352	75.051	60.536	0	0
1.752	0.425	0	0.086	1.64	0.748	0	0.132	1.842	1.539	0	3.492	6.717	6.676	0	0.509	1.591	1.378	0	2.29
1.454	0.372	0	0.091	1.361	0.631	0	0.139	1.528	1.282	0	3.669	5.023	5.006	0	0.535	1.32	1.165	0	2.407
1.25	0.337	0	0.095	1.17	0.552	0	0.146	1.314	1.107	0	3.846	3.82	3.82	0	0.56	1.135	1.022	0	2.523
1.113	0.315	0	0.1	1.042	0.501	0	0.152	1.17	0.99	0	4.023	3.121	3.132	0	0.586	1.011	0.927	0	2.639
1.027	0.303	0	0.104	0.961	0.469	0	0.159	1.08	0.917	0	4.2	2.81	2.827	0	0.612	0.933	0.87	0	2.755
0.982	0.299	0	0.108	0.919	0.454	0	0.166	1.033	0.879	0	4.377	2.549	2.572	0	0.638	0.892	0.842	0	2.871
0.973	0.302	0	0.113	0.911	0.452	0	0.172	1.023	0.872	0	4.554	2.338	2.365	0	0.663	0.884	0.84	0	2.987
0.999	0.311	0	0.117	0.935	0.465	0	0.179	1.05	0.896	0	4.731	2.176	2.208	0	0.689	0.907	0.864	0	3.103
1.063	0.328	0	0.122	0.995	0.493	0	0.186	1.117	0.952	0	4.909	2.065	2.1	0	0.715	0.965	0.916	0	3.219
1.171	0.353	0	0.126	1.096	0.539	0	0.193	1.232	1.047	0	5.086	2.003	2.041	0	0.741	1.064	1	0	3.335
1.338	0.389	0	0.13	1.252	0.608	0	0.199	1.406	1.192	0	5.263	1.991	2.032	0	0.767	1.215	1.126	0	3.451
1.583	0.441	0	0.135	1.481	0.708	0	0.206	1.664	1.405	0	5.44	2.029	2.071	0	0.792	1.437	1.31	0	3.568
1.94	0.514	0	0.139	1.816	0.853	0	0.213	2.04	1.716	0	5.617	2.116	2.16	0	0.818	1.762	1.576	0	3.684

UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	4776.899	4098	4153.089	0	0	0	0	0	145.252	6090.987	867.791
2331.299	2433.774	232.649	282.826	0	266.251	0	2513.51	1505	1586.836	0	2513.51	1505	2421.188	232.649	1157.444	3333.16	1419.107
2331.299	1960.664	199.04	233.259	0	221.955	0	1672.267	1505	1518.573	0	1672.267	1505	1656.955	199.04	866.201	2783.227	1097.216
2331.299	1681.276	172.938	199.381	0	190.646	0	1175.484	1505	1478.262	0	1175.484	1505	1205.649	172.938	674.341	2322.611	873.196
2331.299	1511.161	152.598	176.615	0	168.681	0	873	1505	1453.717	0	873	1505	930.855	152.598	545.866	1988.729	720.083
2331.299	1405.438	136.747	162.134	0	153.748	0	685.012	1505	1438.462	0	685.011	1505	760.075	136.747	459.297	1875.109	630.446
2331.299	1339.572	124.45	154.266	0	144.417	0	567.895	1505	1428.959	0	567.895	1505	653.679	124.45	401.604	1779.303	568.262
2331.299	1299.938	115.023	152.16	0	139.892	0	497.421	1505	1423.24	0	497.421	1505	589.656	115.023	364.863	1701.311	526.59
2331.299	1279.076	107.965	155.621	0	139.879	0	460.326	1505	1420.23	0	460.326	1505	555.958	107.965	344.384	1641.134	501.325
2331.299	1273.316	102.918	165.082	0	144.548	0	450.085	1505	1419.399	0	450.085	1505	546.654	102.918	337.686	1598.77	490.296
2331.299	1281.678	99.634	181.69	0	154.585	0	464.953	1505	1420.606	0	464.953	1505	560.161	99.634	343.985	1574.221	492.814
2331.299	1305.589	97.957	207.533	0	171.337	0	507.469	1505	1424.056	0	507.469	1505	598.785	97.957	364.033	1567.486	509.536
2331.299	1349.299	97.808	246.084	0	197.104	0	585.19	1505	1430.362	0	585.19	1505	669.391	97.808	400.27	1578.565	542.601
2331.299	1421.16	99.18	302.979	0	235.658	0	712.968	1505	1440.731	0	712.968	1505	785.472	99.18	457.345	1607.458	596.074

UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	0.888	0.147	0.207	0	0	0	0	0	0.027	0.318	0.062
0.035	0.098	0.344	0.271	0	0.295	0	0.113	0.046	0.051	0	0.042	0.006	0.039	0.344	0.04	0.093	0.047
0.026	0.069	0.294	0.227	0	0.249	0	0.082	0.036	0.04	0	0.028	0.005	0.026	0.294	0.029	0.051	0.032
0.019	0.051	0.262	0.199	0	0.22	0	0.063	0.029	0.032	0	0.02	0.004	0.018	0.262	0.021	0.025	0.022
0.015	0.039	0.241	0.182	0	0.201	0	0.051	0.024	0.026	0	0.014	0.003	0.013	0.241	0.016	0.015	0.016
0.012	0.031	0.228	0.17	0	0.189	0	0.043	0.02	0.022	0	0.011	0.003	0.01	0.228	0.012	0.013	0.013
0.01	0.026	0.222	0.164	0	0.183	0	0.037	0.017	0.019	0	0.009	0.002	0.008	0.222	0.01	0.011	0.011
0.009	0.022	0.221	0.161	0	0.181	0	0.034	0.015	0.016	0	0.007	0.002	0.007	0.221	0.009	0.01	0.01
0.008	0.019	0.225	0.161	0	0.182	0	0.031	0.013	0.015	0	0.006	0.002	0.006	0.225	0.008	0.009	0.009
0.007	0.018	0.235	0.165	0	0.188	0	0.029	0.012	0.014	0	0.005	0.002	0.005	0.235	0.008	0.008	0.009
0.007	0.017	0.253	0.173	0	0.2	0	0.028	0.011	0.013	0	0.005	0.002	0.005	0.253	0.008	0.007	0.008
0.007	0.016	0.28	0.187	0	0.217	0	0.028	0.011	0.012	0	0.005	0.001	0.004	0.28	0.008	0.007	0.009
0.007	0.016	0.322	0.207	0	0.245	0	0.027	0.011	0.012	0	0.005	0.001	0.004	0.322	0.009	0.006	0.01
0.008	0.017	0.386	0.239	0	0.288	0	0.028	0.011	0.012	0	0.005	0.001	0.005	0.386	0.01	0.006	0.011

UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
0	0	0	0	0	0	0	1.378	75.051	69.073	0	0	0	0	0	0.042	113.206	13.803
11.019	6.11	1.036	1.271	0	1.193	0	0.798	13.21	12.202	0	0.13	2.816	0.376	1.036	0.126	5.934	0.835
8.429	5.042	1.086	1.167	0	1.14	0	0.838	10.959	10.138	0	0.137	2.336	0.338	1.086	0.112	4.477	0.646
6.778	4.385	1.137	1.089	0	1.104	0	0.879	9.421	8.728	0	0.143	2.008	0.314	1.137	0.101	3.444	0.511
5.73	3.991	1.188	1.032	0	1.083	0	0.919	8.391	7.785	0	0.15	1.789	0.3	1.188	0.093	2.839	0.43
5.092	3.778	1.241	0.992	0	1.074	0	0.96	7.744	7.194	0	0.156	1.651	0.293	1.241	0.087	2.562	0.392
4.757	3.696	1.294	0.969	0	1.076	0	1	7.405	6.886	0	0.163	1.578	0.293	1.294	0.083	2.338	0.361
4.672	3.724	1.347	0.96	0	1.088	0	1.041	7.337	6.826	0	0.17	1.564	0.297	1.347	0.08	2.165	0.338
4.824	3.856	1.4	0.965	0	1.109	0	1.081	7.532	7.009	0	0.176	1.605	0.307	1.4	0.079	2.041	0.322
5.236	4.102	1.454	0.983	0	1.139	0	1.121	8.012	7.453	0	0.183	1.708	0.322	1.454	0.078	1.969	0.313
5.975	4.491	1.508	1.015	0	1.178	0	1.162	8.83	8.208	0	0.189	1.882	0.344	1.508	0.079	1.951	0.311
7.168	5.078	1.562	1.064	0	1.228	0	1.202	10.084	9.363	0	0.196	2.149	0.375	1.562	0.081	1.989	0.318
9.04	5.962	1.615	1.13	0	1.29	0	1.243	11.932	11.064	0	0.203	2.543	0.417	1.615	0.084	2.091	0.333
11.985	7.316	1.668	1.217	0	1.366	0	1.283	14.628	13.545	0	0.209	3.118	0.475	1.668	0.089	2.267	0.359

Vehicle Miles Traveled: 186,828

VEHICLE PERCENTAGES

Vehicle Type	Percent	Non-catalyst	Catalyst	Diesel
Light Auto	44.2%	0.0%	100.0%	0.0%
Light Truck < 3,750 lbs	9.9%	0.0%	99.0%	1.0%
Light Truck 3,751-5,750	21.8%	0.0%	100.0%	0.0%
Medium Truck 5,751-8,500	12.1%	0.0%	100.0%	0.0%
Lite-Heavy 8,501-10,000	2.3%	0.0%	82.6%	17.4%
Lite-Heavy 10,001-14,000	0.7%	0.0%	57.1%	42.9%
Med-Heavy 14,001-33,000	1.1%	0.0%	18.2%	81.8%
Heavy-Heavy 33,001-60,000	2.1%	0.0%	0.0%	100.0%
Line Haul > 60,000 lbs	0.0%	0.0%	0.0%	0.0%
Urban Bus	0.0%	0.0%	0.0%	0.0%
Motorcycle	4.0%	32.5%	67.5%	0.0%
School Bus	0.1%	0.0%	0.0%	100.0%
Motorhome	1.7%	0.0%	88.2%	11.8%

CO2 EMISSION FACTORS (grams/mile)

Vehicle Type	EMFAC Type	Non-catalyst	Catalyst	Diesel
Light Auto	LDA	0	330.114	345.72
Light Truck < 3,750 lbs	LDT1	0	416.732	345.72
Light Truck 3,751-5,750	LDT2	0	425.452	345.72
Medium Truck 5,751-8,500	MDV	0	578.915	345.72
Lite-Heavy 8,501-10,000	LHDT1	0	567.895	519.048
Lite-Heavy 10,001-14,000	LHDT2	0	567.895	519.569
Med-Heavy 14,001-33,000	MHDT	0	567.895	1505
Heavy-Heavy 33,001-60,000	HHDT	0	567.895	1924.234
Line Haul > 60,000 lbs	LHV	0	567.895	1505
Urban Bus	UB	0	567.895	2331.299
Motorcycle	MCY	124.45	154.266	0
School Bus	SBUS	0	567.895	1505
Motorhome	MH	0	567.895	1505

METHANE EMISSION FACTORS (grams/mile)

Vehicle Type	EMFAC Type	Non-catalyst	Catalyst	Diesel
Light Auto	LDA	0	0.006	0.003
Light Truck < 3,750 lbs	LDT1	0	0.008	0.003
Light Truck 3,751-5,750	LDT2	0	0.013	0.003
Medium Truck 5,751-8,500	MDV	0	0.015	0.003
Lite-Heavy 8,501-10,000	LHDT1	0	0.006	0.004
Lite-Heavy 10,001-14,000	LHDT2	0	0.005	0.004
Med-Heavy 14,001-33,000	MHDT	0	0.008	0.005
Heavy-Heavy 33,001-60,000	HHDT	0	0.113	0.013
Line Haul > 60,000 lbs	LHV	0	0.019	0.005
Urban Bus	UB	0	0.038	0.01
Motorcycle	MCY	0.222	0.164	0
School Bus	SBUS	0	0.037	0.017
Motorhome	MH	0	0.009	0.002

NOx EMISSION FACTORS (grams/mile)

Vehicle Type	EMFAC Type	Non-catalyst	Catalyst	Diesel
Light Auto	LDA	0	0.043	1.167
Light Truck < 3,750 lbs	LDT1	0	0.055	1.172
Light Truck 3,751-5,750	LDT2	0	0.095	1.162
Medium Truck 5,751-8,500	MDV	0	0.108	1.184
Lite-Heavy 8,501-10,000	LHDT1	0	0.136	0.982
Lite-Heavy 10,001-14,000	LHDT2	0	0.108	0.919
Med-Heavy 14,001-33,000	MHDT	0	0.166	1.033
Heavy-Heavy 33,001-60,000	HHDT	0	4.377	2.549
Line Haul > 60,000 lbs	LHV	0	0.638	0.892
Urban Bus	UB	0	2.871	4.757
Motorcycle	MCY	1.294	0.969	0
School Bus	SBUS	0	1	7.405
Motorhome	MH	0	0.163	1.578

CO2 EMISSIONS (grams)

Vehicle Type	Non-catalyst	Catalyst	Diesel
Light Auto	0.00	27,260,169.31	0.00
Light Truck < 3,750 lbs	0.00	7,630,791.30	63,944.33
Light Truck 3,751-5,750	0.00	17,328,038.32	0.00
Medium Truck 5,751-8,500	0.00	13,087,072.53	0.00
Lite-Heavy 8,501-10,000	0.00	2,015,664.58	2,230,374.00
Lite-Heavy 10,001-14,000	0.00	424,076.82	291,501.57
Med-Heavy 14,001-33,000	0.00	212,409.75	2,530,025.07
Heavy-Heavy 33,001-60,000	0.00	0.00	7,549,523.05
Line Haul > 60,000 lbs	0.00	0.00	0.00
Urban Bus	0.00	0.00	0.00
Motorcycle	302,259.94	778,173.29	0.00
School Bus	0.00	0.00	281,176.38
Motorhome	0.00	1,590,845.08	564,039.82
Total (grams)	302,259.94	70,327,240.99	13,510,584.23
Total (pounds)	666.37	155,045.03	29,785.74

Total CO2 Running Emissions (pounds): 185,497.14

METHANE EMISSIONS (grams)

Vehicle Type	Non-catalyst	Catalyst	Diesel
Light Auto	0.00	495.47	0.00
Light Truck < 3,750 lbs	0.00	146.49	0.55
Light Truck 3,751-5,750	0.00	529.47	0.00
Medium Truck 5,751-8,500	0.00	339.09	0.00
Lite-Heavy 8,501-10,000	0.00	21.30	2.99
Lite-Heavy 10,001-14,000	0.00	3.73	2.24
Med-Heavy 14,001-33,000	0.00	2.99	8.41
Heavy-Heavy 33,001-60,000	0.00	0.00	51.00
Line Haul > 60,000 lbs	0.00	0.00	0.00
Urban Bus	0.00	0.00	0.00
Motorcycle	539.19	827.28	0.00
School Bus	0.00	0.00	3.18
Motorhome	0.00	25.21	0.75
Total (grams)	539.19	2,391.03	69.12
Total (pounds)	1.19	5.27	0.15

Total Methane Running Emissions (pounds): 6.61

N2O EMISSIONS (grams)

Vehicle Type	Non-catalyst	Catalyst	Diesel
Light Auto	0.00	173.03	0.00
Light Truck < 3,750 lbs	0.00	49.08	10.56
Light Truck 3,751-5,750	0.00	188.55	0.00
Medium Truck 5,751-8,500	0.00	118.97	0.00
Lite-Heavy 8,501-10,000	0.00	23.52	35.78
Lite-Heavy 10,001-14,000	0.00	3.93	25.13
Med-Heavy 14,001-33,000	0.00	3.03	84.62
Heavy-Heavy 33,001-60,000	0.00	0.00	487.34
Line Haul > 60,000 lbs	0.00	0.00	0.00
Urban Bus	0.00	0.00	0.00
Motorcycle	153.15	238.19	0.00
School Bus	0.00	0.00	67.42
Motorhome	0.00	22.25	28.82
Total (grams)	153.15	820.55	739.66
Total (pounds)	0.34	1.81	1.63

Total N2O Running Emissions (pounds): 3.78

N_2O/NOx Ratio		
N_2O (mg km^{-1})	NOx (mg km^{-1})	N_2O/NOx Ratio
20	700	0.029
30	650	0.046
12	340	0.035
13	250	0.052
12	260	0.046
13	215	0.060
9	140	0.064
15	160	0.094
0.5	35	0.014
2	35	0.057
23	1300	0.018
22	800	0.028
40	1700	0.024
35	950	0.037
80	1700	0.047
120	1200	0.100
35	1400	0.025
43	1000	0.043
18	600	0.030
20	420	0.048
25	550	0.045
25	500	0.050
12	150	0.080
15	150	0.100
4	110	0.036
5	85	0.059
	Average	0.04873

Source: California Air Resources Board: Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, 2005

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APPENDIX E

Rule 403.2 Regulatory Requirements

(**Adopted:** 07/22/96)

RULE 403.2
Fugitive Dust Control
for the Mojave Desert Planning Area

(A) General

(1) Purpose

(a) To ensure that the NAAQS for PM_{10} will not be exceeded due to anthropogenic sources of fugitive dust within the MDPA; and

(b) To implement the control measures contained in the Mojave Desert Planning Area Federal PM_{10} Attainment Plan.

(2) Applicability

(a) The requirements of this Rule shall apply to owners or operators of sources in the following categories within the MDPA:

(i) Construction/Demolition Activity;
(ii) Heavily Traveled Publicly Maintained Unpaved Roads;
(iii) Weed suppression activity;
(iv) Limestone processing activity in the Lucerne Valley Area; and
(v) Activities on Bureau of Land Management (BLM) land.

(3) Conflicts with Other District Rules

(a) If there is a conflict between the provisions of this Rule and those of District Rule 403, the conflicting provisions of District Rule 403 are superseded.

(B) Definitions

For the purposes of this Rule, the following definitions shall apply:

(1) "Active Operation" - Activity capable of generating Fugitive Dust, including, but not limited to: Bulk Material storage, handling and processing; Earth-Moving Activity; Construction/Demolition Activity; and movement of vehicles on Unpaved Roads.

(2) "Air Pollution Control Officer" (APCO) - The person appointed to the position of Air Pollution Control Officer of the District pursuant to the provisions of California Health & Safety Code §40750, and his or her designee.

(3) "Alternative PM_{10} Control Plan" (ACP) - A plan that incorporates emission reducing measures other than those source-specific measures in section (C), and generates Equivalent Emission Reductions.

(4) "Baseline Emissions" - A specific PM_{10} emissions level calculated as the product of an emission rate (pounds of PM_{10} per unit of operations) and an activity rate (number of operations per day). Calculated pursuant to section (G)(7)(a).

(5) "Bulk Material" - Sand, gravel, soil, aggregate and any other organic or inorganic solid matter capable of releasing fugitive dust.

(6) "California Air Resources Board" (ARB) - The California State Air Resources Board, the powers and duties of which are described in Part 2 of Division 26 of the California Health and Safety Code (commencing with section 39500).

(7) "Construction/Demolition Activity" - Any on-site mechanical activity preparatory to or related to building, altering, rehabilitating, demolishing or improving property that results in Disturbed Surface Area, including the following activities: grading; excavation; loading; crushing; cutting; planing; shaping; or ground breaking, but excluding activities related to MDAQMD-permitted industrial operations.

(8) "Disturbed Surface Area" - Portion of the earth's surface that has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed natural condition, thereby increasing the potential for emission of Fugitive Dust. Does not include area restored to a natural state with vegetative ground cover and soil characteristics similar to adjacent or nearby natural conditions.

(9) "Earth-Moving Activity" - Grading, earth cutting and filling, loading or unloading of dirt or other Bulk Materials, adding to or removing from Open Storage Piles of Bulk Materials, landfilling, or soil mulching.

(10) "Enforceable" - Included in a Permit To Operate (PTO) or otherwise subject to enforcement by the District, and submitted as a source-specific SIP revision.

(11) "Equivalent Emission Reductions" - Real, Enforceable, Permanent, Quantifiable, and Surplus emission reductions equal in amount to 120 percent of those required by section (C). Such emission reductions shall be calculated relative to Baseline Emissions. In addition, such emission reductions shall be demonstrated to be equivalent to the reductions required by section (C) using an USEPA-approved modeling demonstration.

(12) "Federal Clean Air Act" (FCAA) - 42 United States Code §7401 et seq.

(13) "Fugitive Dust" - Those solid Respirable Particulate Matter emissions that become airborne, other than those emitted from an exhaust stack, chimney, or vent. Fugitive emissions are directly or indirectly caused by the activities of man.

(14) "Heavily Traveled" - Typically carrying more than 800 vehicle trips per day.

(15) "High Winds" - When wind gusts exceed 40 kilometers (25 miles) per hour or, on an hourly average, when wind speeds exceed 24 kilometers (15 miles) per hour. The average wind speed determination shall be on a 15 minute average at the nearest meteorological station or by wind instrument on site.

(16) "Lucerne Valley Area" - That portion of the MDPA bounded in the south by the township line common to T2N and T3N, in the east by the range line common to R2E and R3E, in the north by the town ship line common to T5N and T6N, and in the west by the range line common to R2W and R1W (see Map One).

(17) "Mojave Desert Planning Area" (MDPA) - That portion of San Bernardino County: north and east of a line running east from the Los Angeles County boundary along the township line common to T3N and T2N, then south along the range line common to R2E and R3E; and south and west of a line running east from the Kern County boundary along the township line common to T11N and T12N, then south along the range line common to R4E and R5E, then south and east along the western and southern boundaries of the Twentynine Palms Marine Corps Air Ground Combat Center, then south along the range line common to R12E and R13E (see Map One).

(18) "National Ambient Air Quality Standards" (NAAQS) - Standards set by the Federal Government that define the acceptable amount of criteria pollutants in the air. Achievement of these standards protects the public's health and welfare.

(19) "Off Highway/Off-Road Recreation Vehicle" (OHV) - Any motorized vehicle primarily defined as an all-terrain motor vehicle, motorcycle, motorbike, ATC, ATV, motor buggy and/or four wheel drive light utility vehicle.

(20) "Open Storage Pile" - Any accumulation of Bulk Material not fully enclosed, covered or chemically stabilized with five percent or greater silt content. Pile silt content shall be assumed to be five percent or greater, unless a person can show the silt content is less.

(21) "Permanent" - Contained in a permit or other instrument which ensures achievement on each and every operating day, and submitted as a source-specific SIP revision.

(22) "Publicly Maintained" - Under the jurisdiction of, and physically maintained by, State, County, or local government.

(23) "Quantifiable" - Able to be measured and/or calculated before and after a reducing action using the same test methods and/or calculation procedures.

(24) "Reasonably Available Control Technology" (RACT) - Any device, system, process modification, apparatus, technique, or combination of the above which results in the lowest emissions rate and which is reasonably available considering technological and economic feasibility, as defined by MDAQMD regulations as of the date of application.

(25) "Reasonably Available Control Measure" (RACM) - A control measure included in the control strategy presented within the "Final Mojave Desert Planning Area Federal PM_{10} Attainment Plan," as adopted July 31, 1995.

(26) "Real" - Represents a reduction in actual emissions.

(27) "Respirable Particulate Matter" (PM_{10}) - Any material , except uncombined water, existing in a finely divided form as a liquid or solid at standard conditions whose mean aerodynamic diameter is smaller than or equal to 10 micrometers as measures by a reference method based on 40 CFR 50, Appendix J and designated in accordance with 40 CFR 53; or methods found in Article 2, Subchapter 6, Title 17, California Code of Regulations (commencing with §94100); or any equivalent method designated in accordance with 40 CFR 53.

(28) "Stabilize" - To reduce the fugitive dust generating capability of a surface by paving, chemically treating, watering, or compacting, sufficient to eliminate Visible Fugitive Dust. Chemical treatment must be performed with a substance approved for such use by the applicable Regional Water Quality Control Board.

(29) "Surplus" - In excess of emission reductions which are otherwise required by Federal, State, or District law, rule, order, permit, or regulation. Proposed District laws, rules, or regulations which have been taken to public workshop are applicable for purposes of this definition.

(30) "Trackout" - Visible Bulk Material deposited upon public roadways as a result of Active Operations.

(31) "Unpaved Road" - Any vehicle travel route not covered by one or more of the following: concrete, asphaltic concrete, or asphalt.

(32) "United States Environmental Protection Agency" (USEPA) - The Administrator of the Environmental Protection Agency or the appropriate designee.

(33) "Visible Fugitive Dust" - Dust emissions from a fugitive source as dark as or darker in shade than that shade designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or of equivalent opacity, for a period or periods aggregating more than three minutes in any one hour.

(C) Requirements

(1) The owner or operator of a source in an affected source category shall comply with the applicable requirements contained in this subsection unless and until the owner or operator has applied for and obtained a District-approved ACP pursuant to section (G).

(2) The owner or operator of any Construction/Demolition source shall:

(a) Use periodic watering for short-term stabilization of Disturbed Surface Area to minimize visible fugitive dust emissions. For purposes of this Rule, use of a water truck to maintain moist disturbed surfaces and actively spread water during visible dusting episodes shall be considered sufficient to maintain compliance;

(b) Take actions sufficient to prevent project-related Trackout onto paved surfaces;

(c) Cover loaded haul vehicles while operating on Publicly Maintained paved surfaces;

(d) Stabilize graded site surfaces upon completion of grading when subsequent development is delayed or expected to be delayed more than thirty days, except when such a delay is due to precipitation that dampens the disturbed surface sufficiently to eliminate Visible Fugitive Dust emissions;

(e) Cleanup project-related Trackout or spills on Publicly Maintained paved surfaces within twenty-four hours; and

(f) Reduce non-essential Earth-Moving Activity under High Wind conditions. For purposes of this Rule, a reduction in Earth-Moving Activity when visible dusting occurs from moist and dry surfaces due to wind erosion shall be considered sufficient to maintain compliance.

(3) The owner/operator of a Construction/Demolition source disturbing 100 or more acres shall, in addition to the provisions of subsection (2):

(a) Prepare and submit to the MDAQMD, prior to commencing Earth-Moving Activity, a dust control plan that describes all applicable dust control measures that will be implemented at the project;

(b) Provide Stabilized access route(s) to the project site as soon as is feasible. For purposes of this Rule, as soon as is feasible shall mean prior to the completion of Construction/Demolition activity;

(c) Maintain natural topography to the extent possible;

(d) Construct parking lots and paved roads first, where feasible; and

(e) Construct upwind portions of project first, where feasible.

(4) Cities, Towns, and the County of San Bernardino shall collectively:

(a) Stabilize sufficient Publicly Maintained Heavily Traveled unpaved roads to reduce fugitive dust entrainment and wind erosion by at least 1541 tons per year of PM_{10} emissions within the MDPA.

(5) The Owner or Operator of a site undergoing weed abatement activity shall not:

(a) Disrupt the soil crust to the extent that Visible Fugitive Dust is created due to wind erosion.

(6) The owner or operator of a limestone processing facility shall:

(a) Stabilize industrial Unpaved Roads carrying more than ten vehicle trips per day with the majority of those vehicles weighing 30 tons or more;

(b) Enclose exterior belt conveyors sufficiently to cover the top and sides of the Bulk Material being transferred, or employ an alternate dust suppression system sufficient to prevent Visible Fugitive Dust;

(c) Manage or treat Bulk Material Open Storage Piles sufficiently to prevent Visible Fugitive Dust emissions. For purposes of this Rule, active watering during visible dusting episodes shall be sufficient to maintain compliance;

(d) Cover loaded Bulk Material haul vehicles while traveling upon publicly maintained paved surfaces;

(e) Employ a dust suppression system at Bulk Material transfer points sufficient to prevent Visible Fugitive Dust;

(f) Stabilize or eliminate Bulk Material Open Storage Piles that have been or are expected to be inactive for at least one year;

(g) Stabilize as much unpaved operations area as is feasible;

(h) Vacuum sweep Bulk Material spills on paved surfaces weekly or more often, as needed;

(i) Prevent facility-related Bulk Material Trackout on Publicly Maintained paved surfaces;

(j) Clean up facility-related Bulk Material Trackout and spills on Publicly Maintained roads within twenty-four hours; and

(k) Employ belt cleaners and/or conveyor return scrapers to minimize conveyor spillage.

(7) The BLM shall prepare a dust control plan that includes the following fugitive dust control measures:

(a) Stipulate that all new authorizations for stationary emission sources obtain all necessary MDAQMD permits and satisfy all applicable SIP provisions, including project- or activity-specific RACM;

(b) Control dust emissions from certain roads and routes as per the Wilderness classification in the California Desert Protection Act;

(c) Control dust emissions from certain roads and routes as identified through general BLM planning;

(d) Implement those PM_{10} control measures required to manage organized off-road events and/or competitions on public land;

(e) Use BLM-standard road design and drainage specifications when maintaining existing roads or authorizing road maintenance and new road construction; and

(f) Include public educational information on PM_{10} emissions with BLM open area literature and on information signs in heavily used areas.

(D) Exemptions

(1) The requirements of this Rule shall not apply to:

(a) Agricultural operations, as defined by California Health and Safety Code §41704(b);

(b) Actions required by federal or state endangered species legislation;

(c) Actions that could be considered prohibited habitat modification under the federal or state endangered species legislation or require Section 10(a) or 2081 review;

(d) Construction/Demolition projects disturbing less than one-half total acre or 21,780 square feet;

(e) Active Operations conducted during emergency situations, or in conjunction with any officially declared disaster or state of emergency;

(f) Active Operations conducted by essential service utilities to provide electricity, natural gas, telephone, water and sewer services during periods of service outages and emergency disruptions;

(g) Non-periodic (occurring no more three times per year and lasting less than thirty cumulative days per year) or emergency maintenance of flood control channels and water spreading basins;

(h) Blasting operations as permitted by the California Occupational Safety and Health Administration;

(i) Emergency fire suppression operations ordered, performed or sanctioned by Federal, state or local government (including, but not limited to, creation of fuel breaks);

(j) A Construction/Demolition contractor, after the time the contract ends, provided that such contractor satisfied the requirements of this Rule during the contractual period;

(k) A grading contractor, for a phase of Active Operations after the contractual completion of that phase of Earth-Moving Activity, through and including five days after the final grading inspection;

(l) Weed abatement operations disturbing less than one acre on a lot that includes a residence;

(m) Construction/Demolition activities and/or weed abatement operations performed to maintain easements and/or roadways (including shoulders);

(n) Dust generated by mowing performed for weed abatement purposes;

(o) Casual, informal recreational use of public land, including, but not limited to Off-Road Recreational Vehicle use; and

(p) Those BLM roads and routes administered by the Federal Highway Administration and the National Recreation Trails Fund Act.

(E) Recordkeeping

(1) The owner or operator of an affected source shall maintain a Dust Control Plan as required by Sections (C)(3) and (C)(7) on site, or readily accessible, for at least two years after the date of each entry. Such records shall be provided to the District upon request.

(F) Test Methods

(1) Compliance with the provisions of this Rule shall be determined as follows:

(a) For PM_{10} emission and reduction calculations other than unpaved roads: amounts shall be calculated using USEPA "Control of Open Fugitive Dust Sources" (EPA-450/3-88-008). For PM_{10} emission and reduction calculations for unpaved roads: amounts shall be calculated using USEPA AP-42 Section 11.2.1. For purposes of this Rule, the following values may be used as defaults, in the absence of specific data: silt content of 15 percent, vehicle average weight of three tons and four wheels, and 20 days with greater than 0.01 inch of precipitation.

(b) Compliance with the requirement "Cover Haul Vehicles" is equivalent to complying with the vehicle freeboard requirements of the California Vehicle Code (§23114) on both public and private paved roads.

(c) Silt content shall be determined through sampling and analysis in accordance with ASTM Method C-136-92. Results of ASTM Method C-136-92 are valid for 60 days from the date the sample was taken.

(2) Alternative test methods may be used upon obtaining the approval of the Air Pollution Control Officer, CARB and USEPA.

(G) Alternative PM_{10} Control Plans (ACPs)

(1) An owner or operator of a source may, at any time after the adoption of this Rule, apply for and obtain District approval for an ACP as set forth in this subsection.

(2) Application

(a) The owner or operator may apply for an ACP by submitting a plan to the District which includes the following elements:

(i) Name(s), address(es), and phone number(s) of the official(s) responsible for the preparation, submittal and implementation of the ACP;
(ii) Description and location of operations;
(iii) Listing of all Active Operations included in subsection (G)(2)(a)(ii) generating Fugitive Dust emissions;
(iv) Estimation of baseline, annual, and daily emissions from each source identified in subsection (G)(2)(a)(iii);
(v) Description of actions required by the applicable portion of section (C);
(vi) Descriptions of actions proposed to generate Equivalent Emission Reductions instead of subsection (G)(2)(a)(v). Such description shall be sufficiently detailed to demonstrate Real, Enforceable, Permanent, Quantifiable, and Surplus Equivalent Emission Reductions during all periods of Active Operations;
(vii) Commitment to a post-approval monitoring program to evaluate the effectiveness of subsection (G)(2)(a)(vi) actions; and
(viii) Description of contingency measures for implementation if actions proposed for subsection (G)(2)(a)(vi) prove insufficient.
(ix) An application for an ACP which proposes using add-on controls to achieve Equivalent Emission Reductions shall specify test methods for both the emission collection system and the control system.

(3) Issuance Procedure

(a) The owner or operator of a source electing to obtain an approved ACP shall submit an application for an ACP to the APCO in writing.

(i) The owner or operator shall remain subject to federal enforcement of existing section (C) and SIP limits, unless and until USEPA approves the ACP as a source specific SIP revision pursuant to 42 U.S.C. §7410(a)(3)(A) (FCAA §110(a)(3)(A)).

(b) The APCO shall either approve, conditionally approve, or disapprove a proposed ACP, in writing, within thirty (30) calendar days of receipt of the ACP, based on the following criteria:

(i) The proposed ACP demonstrates Equivalent Emission Reductions to those required under section (C);

(ii) The proposed ACP does not result in a net increase in any Baseline Emission of an air pollutant regulated, proposed for regulation, listed or the subject of a "notice-of-intent-to-list" pursuant to the provisions of 42 U.S.C. §7412, National Emission Standards for Hazardous Air Pollutants (FCAA §112). The Baseline Emissions of a hazardous pollutant shall be determined by the lower of either actual or NESHAPS' allowable emissions;

(iii) Add-on controls shall not be considered part of an approved ACP unless such controls are incorporated in an emissions averaging approach to compliance; and

(iv) The proposed ACP complies with all applicable requirements of section (G).

(c) If the APCO conditionally approves an ACP, the APCO shall notify the applicant in writing of the ACP's conditional approval and of the deficiencies which require corrections.

(i) The applicant shall submit a revised ACP within ninety (90) days of APCO notice or the conditionally approved ACP is automatically deemed disapproved. The APCO shall evaluate the revised ACP based upon the criteria of subsection (G)(3)(b).

(d) If the APCO approves an ACP, the APCO shall notice a public hearing regarding the proposed ACP before the Governing Board of the District.

(i) Such notice shall be published in a newspaper of general circulation at least 30 days prior to the meeting of the Governing Board at which the public hearing is scheduled to take place.

(e) After the APCO approves the proposed ACP, the permits for any existing permit units included in the ACP shall be surrendered and new permits incorporating provisions of the ACP shall be issued.

(i) ACP emission reductions which are accomplished through equipment shutdown or production curtailment shall have their permanency ensured by a permit or other instrument which limits the total PM_{10} emissions from the equipment in question.

(ii) Notwithstanding provisions of District Rule 219, if the ACP encompasses the operation of equipment not requiring a permit, such equipment shall lose its exemption status and require a permit.

(f) At the public hearing, the APCO shall recommend that the Governing Board adopt the approved ACP for submission to ARB as a SIP submittal.

(g) If adopted by the Governing Board, the ACP shall thereafter be submitted by the APCO to ARB for submittal to USEPA as a source-specific revision to the SIP.

(4) Renewal

(a) An approved ACP shall be valid for a period of one year from the date of approval by the APCO.

(b) Approved ACPs shall be resubmitted, annually, at least 90 days prior to their expiration date.

(i) If all Fugitive Dust sources and emission reduction-producing actions remain identical to those identified in the previously approved ACP, the resubmittal may contain a simple statement of "no change" and the ACP shall be valid for an additional year. Otherwise a resubmittal shall conform to the requirements of subsection (G)(2).

(c) The APCO shall send a list of all approved and renewed ACPs to USEPA on an annual basis.

(5) ACP Recordkeeping

(a) The owner or operator operating under an approved ACP shall maintain daily operating records, source tests, laboratory analyses, monitoring data, data required to support ACP elements specified in subsection (G)(2)(a), and any other appropriate information in a manner and form sufficient to determine the compliance of the owner or operator with the ACP on a twenty-four (24) hour basis.

(6) Violations

(a) Failure to comply with any provisions in an approved or conditionally approved ACP shall constitute a violation of this Rule.

(7) Calculations

(a) Baseline Emission calculations:

(i) Shall use the lowest of either: (1) the actual emission rate; (2) SIP allowable emission limit; or (3) RACT limit. Calculations shall use the lowest of either actual or SIP allowable values for the activity rate;

(ii) Shall use, for activity rate actual values, the average values from data for two years directly preceding the source's application for an ACP, unless another two year period can be shown to better represent the source's normal allowable operations to the satisfaction of the APCO and the USEPA. Sources lacking specific daily activity records may substitute other records that establish daily PM_{10} emissions; and

(iii) Shall include data for all permit units included in the ACP.

(H) Contingency Measures

(1) The requirements of this section only apply if USEPA makes a finding, as evidenced by publication in the Federal Register, that:

(a) The MDPA has failed to make reasonable further progress toward attainment of the PM_{10} NAAQS; or

(b) There has been a violation of the PM_{10} NAAQS within the MDPA between January 1, 1998 and December 31, 2000.

(2) Contingent Requirements

(a) Cities, Towns and the County of San Bernardino shall:

(i) Stabilize sufficient Unpaved Roads to generate at least 2,267 tons per year of fugitive PM_{10} emission reductions.

(I) Compliance Schedule

(a) Any owner or operator of a weed abatement source shall comply on and after December 31, 1996;

(b) Any owner or operator of a Construction/Demolition source shall comply on and after December 31, 1996;

(c) Any owner or operator of a limestone processing facility shall comply on and after December 31, 1997;

(d) Cities, Towns, and the County of San Bernardino shall comply on and after December 31, 1997; and,

(e) The BLM shall comply with the following compliance schedule:

(i) Submit a draft Dust Control Plan addressing all applicable portions of Section (C) on or before September 30, 1996, to which the APCO shall respond within 60 days;

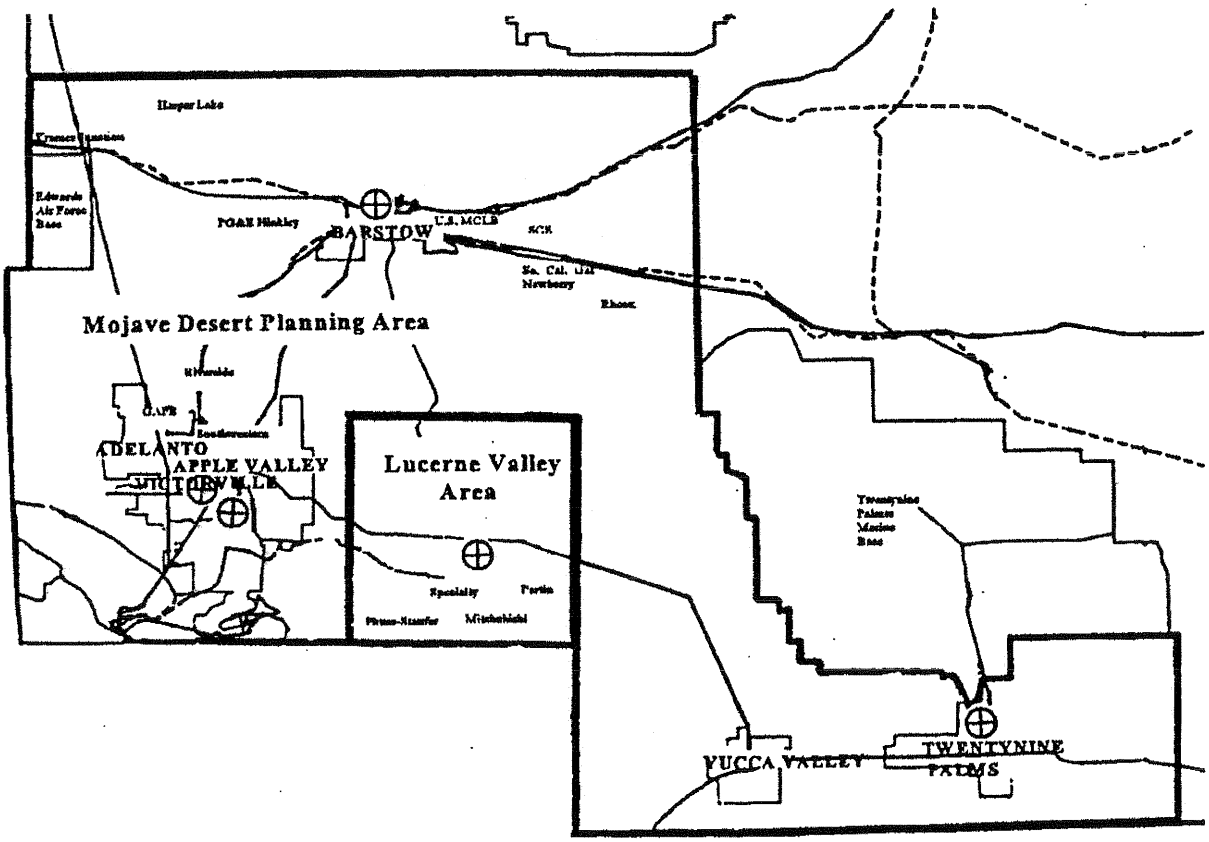
(ii) Submit a final Dust Control Plan addressing all APCO comments on or before December 31, 1996, which the APCO shall transmit to ARB for submission to USEPA as a SIP revision; and

(iii) Implement all Dust Control Plan elements on or before December 31, 1997.

[SIP: Submitted as adopted 7/22/97 on 10/18/96]

Map One

Mojave Desert Planning Area
and
Lucerne Valley Area



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APPENDIX F

Specific Plan Requirements / Design Features

8 GREEN DEVELOPMENT SYSTEMS

8.1 DEFINITION AND OBJECTIVES

8.1.1 Introduction

San Bernardino County and all of California will experience significant population growth over the next 50 years. According to a report released in July 2007 by the State Department of Finance, the population in San Bernardino County is projected to reach 3.66 million by 2050. This is an increase for the County of over 1.6 million people from its current population.

The question therefore is not will the High Desert of San Bernardino County grow, but rather how will the High Desert grow?

This Specific Plan creates a regulatory framework which responds to this important how question with the answer "with Green Development". The Green Development Goals and Efficiency Provisions contained in the Specific Plan, and summarized in this chapter, are intended to result in a superior community development which reduces greenhouse gas emissions and conserves water and energy resources, as consistent with the California Global Warming Solutions Act (AB 32).

8.1.2 Definition

"Green Development" is not a term with one concise, universal definition; rather it embodies a focused design and development approach with an overarching principle of creating and maintaining human settlement patterns in an environmentally sensitive manner. For this Specific Plan, the definition is restated this way: "Green Development" accommodates inevitable human population growth by creating quality living environments which maximize the livability and functionality of human spaces while integrating the ecological and cultural integrity of the natural environment in which they are situated.

8.1.3 Goals

Four (4) Green Development goals are incorporated here to guide the implementation of the Specific Plan towards the Green Development principle.

Goal 1
Land Use Efficiency

Goal 2
Transportation Efficiency

Goal 3
Water Efficiency

Goal 4
Energy Efficiency

These goals will be achieved through the Specific Plan regulations which govern the design and implementation of land use patterns, infrastructure, buildings, energy systems, landscapes and other features at the subject site. These Specific Plan provisions are summarized below as they relate to each goal. The Specific Plan section where the full provision is located is identified in (parentheses) herein.

8.2 LAND USE EFFICIENCY

The following Green Development provisions are incorporated in this Specific Plan to respect the natural site, increase land use efficiency, reduce greenhouse gas emissions and increase public health of residents and surrounding neighborhoods.

1. Preserves in place over 250 acres of natural open space comprising scenic foothills, significant boulder groupings and natural drainage courses including Fairview Creek. Refer to Exhibit 5-9, Conceptual Open Space and Recreation Plan.

2. Preserves in place the natural feature "Quail Spring" and restores its aesthetic and functional value through clean up, siting of adjacent park and trail access, maintenance and protection.

3. Establishes compatibility with existing, adjoining Fairview Valley development via location of larger lot sizes to establish compatible community character along perimeter of project areas. Refer to Exhibit 5-9, Conceptual Open Space and Recreation Plan.

4. Respects adjacent Town of Apple Valley's requirements for a maximum of two dwellings per acre. Refer to Chapter 5, Land Use.

5. Provides a public Equestrian Park and Trail Staging Area at a convenient location for use by all residents of Fairview Valley and eastern Apple Valley, thereby limiting truck and trailer trips to farther facilities. Refer to Chapter 3, Jurisdictional Relationship and Chapter 5, Land Use.

6. Provides a Neighborhood Commercial and Public Safety center at a location within the valley which will reduce vehicle miles traveled for daily retail needs for existing and future residents and thereby reduce vehicle emissions Refer to Exhibit 7-1, Conceptual Fairview Valley Equestrian Park Plan.

7. Locates highest density of homes / people near Community Recreation Areas and Neighborhood Commercial center. Refer to Exhibit 5-1, Conceptual Land Use Plan. Refer to Exhibit 5-8, Commercial and Public Safety Center Concept Plan.

8. Provides a primarily active adult/senior resort community which results in a more self-contained development, thereby reducing vehicle trips.

9. Requires incremental site grading prior to construction of each phase, rather than mass site clearance, to reduce air pollution from wind blown dust particles. Refer to Exhibit 7-8, Conceptual Grading Plan.

10. Requires preservation in place and/or relocation of existing on site Joshua Trees per a Joshua Tree Management Program adopted by the County. Refer to Section 5.5.1, Community Landscape. Refer to Exhibit 5-7, Examples of Preserved Joshua Tree Groupings.

8.3 TRANSPORTATION EFFICIENCY

The following Green Development provisions are incorporated in this Specific Plan to increase overall transportation system efficiency, reduce greenhouse gas emissions and decrease demand for gasoline powered vehicles.

1. Locates recreation areas and parks within walking distance of the majority of active adult residences to limit daily vehicle trips. Refer to Exhibit 6-4, Conceptual Mobility Plan.

2. Establishes maximum speed limits on all private streets that accommodate Neighborhood Electric Vehicles (NEVs) with convenient access to recreation areas and the Neighborhood Commercial center. Refer to Exhibit 6-4, Conceptual Mobility Plan.

3. Designates multiple transit stops to service future public transportation routes. Refer to Exhibit 5-5, Transit Stops Concept Plan.

4. Maintains and improves road access to existing, adjoining development. Refer to Exhibit 6-1, conceptual Circulation Plan and Exhibit 6-2, Road Extension Improvements.

5. Provides miles of community trails providing connections to recreation, shopping and regional trail systems. Refer to Exhibit 6-4, Conceptual Mobility Plan.

6. Requires the majority of local cul-de-sac streets, if utilized on future tract maps, to be have open pedestrian access to an adjacent street's sidewalk, trail, or open space to encourage walking within and between neighborhoods. Refer to Exhibit 5-6, Preferred Cul-de-Sac Examples.

8.4 WATER EFFICIENCY

The following Green Development provisions are incorporated in this Specific Plan to increase water use efficiency and decrease water use demand.

1. Requires a minimum of 90% of all non-turf planting areas in common areas and street right of ways to utilize drought tolerant and/or native plant materials. Refer to Section 5.5, Landscape Concept Plan.

2. Establishes a maximum percentage of turf grass coverage in common and residential front yards for lots ¾ acre and larger (19% max.) and less than ¾ acre (28% max.). Refer to Section 5.5, Landscape Concept Plan.

3. Eliminates "non-functional" turf grass coverage allowed in recreation areas. Refer to Section 5.5, Landscape Concept Plan.

4. Provides a wastewater treatment system which reuses reclaimed water to irrigate common area and street right of way landscape. Refer to Chapter 7, Public Facilities.

5. Requires micro-irrigation systems for watering of plants within common areas and street right of ways. Refer to Section 5.5, Landscape Concept Plan.

6. Specific Plan Design Guidelines strongly encourage incorporation of water saving features and technologies within residential and commercial buildings. Refer to Chapter 7, Public Facilities.

7. Provision of community pool(s) at the community recreation areas within convenient distance from the majority of active adult homes reduces the need for private pools at individual homes thereby decreasing supplemental water requirements at individual lots. Refer to Exhibit 7-3, Conceptual Village A and B Recreation Areas and Exhibit 5-1, Conceptual Land Use Plan.

8.5 ENERGY EFFICIENCY

The following Green Development provisions are incorporated in this Specific Plan to increase use of renewable energy sources, increase energy efficiency, reduce greenhouse gas emissions and decrease energy demand.

1. Requires that a minimum of 25% of the total residential units constructed within the Specific Plan Area shall be powered primarily by solar energy. Refer to Chapter 5, Land Use.

2. Establishes a "dark sky" policy which limits street lighting and thereby the electricity requirements to decision making points (e.g., street intersections), night-use recreation areas or where County public safety officials deem them necessary. Refer to Section 5.4.14, Dark Sky Regulations.

3. Encourages home orientation with the majority of window areas facing due north and south, by designing local streets in a predominantly east-west direction, to minimize transfer of heat generated by early morning and late afternoon summer sunlight through windowed surfaces. Conversely in the winter, exposed windows on the southern side of a home take advantage of the natural heating and lighting effects of the low sun position. Refer to Appendix D, Community Design Guidelines.

4. Provision of community pool(s) at the community recreation areas within convenient distance from the majority of active adult homes reduces the need for private pools at individual homes thereby decreasing pool equipment energy requirements at individual lots. Refer to Chapter 7, Public Facilities.

5. Specific Plan Design Guidelines strongly encourage recycling of viable construction waste and reuse of wood construction waste as on-site mulch. Refer to Chapter 7, Public Facilities.

6. Specific Plan Design Guidelines strongly encourage home and commercial construction which exceeds requirements of Title 24. Refer to Appendix D, Community Design Guidelines.

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41 Corporate Park, Suite 300 Irvine, CA 92606 949.660.1994 main 949.660.1911 fax www.urbanxroads.com

October 28, 2009

Mr. Eric Flodine
STRATA EQUITY GROUP
4370 La Jolla Village Drive, Suite 960
San Diego, CA 92122

SUBJECT: Hacienda at Fairview Valley Air Quality and Climate Change Impact Analysis – Supplemental Analysis

Dear Mr. Flodine:

INTRODUCTION

The firm of Urban Crossroads, Inc. is pleased to submit the following supplemental analysis for the Hacienda at Fairview Valley Air Quality and Climate Change Impact Analysis. The information herein supplements the December 10, 2008 report. The purpose of the supplemental information is to provide clarification on GHG emissions and impacts to Climate Change.

If you have any questions or require any additional information regarding this response to comments, please don't hesitate to give me a call at (949) 660-1994.

Sincerely,

URBAN CROSSROADS, INC.

Haseeb Qureshi,
Senior Air Quality Specialist

AE:HQ:MT
JN:05924-Update

ATTACHMENT A

SUPPLEMENTAL ANALYSIS/INFORMATION

Total Greenhouse Gas Emissions (Annual) (Metric Tons Per Year) (Phase 1 Interim 2020)

Source	CO_2	N_2O		CH_4	
	mtpy	mtpy	mtpy CO_2 EQ	mtpy	mtpy CO_2 EQ
Construction Activity (Phase 1-4)	823.83	0.038	11.87	0.053	1.11
Mobile Source Emissions	21,538.01	0.65	200.01	1.06	22.22
Energy Use Emissions	5,726.99	0.05	16.16	0.23	4.93
Water Use Related Emissions	807.64	0.01	3.10	0.03	0.63
Municipal Solid Waste Generation				51.19	1,074.96
Natural Gas Emissions	5,061.98	0.09	28.77	0.10	2.04
Total (metric tons per year)	33,134.62	0.80	248.04	52.61	1,104.78
Total (Metric Tons CO_2 Equivalent)	35,324.25				
CO_2 = Carbon Dioxide; N_2O = Nitrous Oxide; CH_4 = Methane					

Note: 1. Construction emissions are first totaled over the economic lifetime of the project and then amortized over 30 years, consistent with SCAQMD guidance 2. Annual Emissions are the average of summer and winter emissions, includes emissions from mobile and area sources.

Source: Urban Crossroads, Hacienda at Fairview Valley Air Quality Impact Analysis, December 2008.

Total Greenhouse Gas Emissions (Annual) (Metric Tons Per Year) (Phase 2 Buildout 2030)

Source	CO_2	N_2O		CH_4	
	mtpy	mtpy	mtpy CO_2 EQ	mtpy	mtpy CO_2 EQ
Construction Activity (Phase 1-4)	823.83	0.038	11.87	0.053	1.11
Mobile Source Emissions	33,135.08	0.61	188.84	1.21	25.34
Energy Use Emissions	9,582.08	0.09	27.04	0.39	8.24
Water Use Related Emissions	1,473.73	0.01	3.10	0.06	1.26
Municipal Solid Waste Generation				88.50	1,858.44
Natural Gas Emissions	9,056.33	0.17	51.47	0.17	3.65
Total (metric tons per year)	53,247.22	0.87	270.46	90.33	1,896.93
Total (Metric Tons CO_2 Equivalent)	56,251.42				
CO_2 = Carbon Dioxide; N_2O = Nitrous Oxide; CH_4 = Methane					

Note: 1. Construction emissions are first totaled over the economic lifetime of the project and then amortized over 30 years, consistent with SCAQMD guidance 2. Annual Emissions are the average of summer and winter emissions, includes emissions from mobile and area sources.

Source: Urban Crossroads, Hacienda at Fairview Valley Air Quality Impact Analysis, December 2008.

Existing and Proposed State Measures
Greenhouse Gas Emissions Reductions
(Metric Tons Per Year) (Phase 1 Interim 2020)

Measure	Sector	Percent Reduction from BAU (Sector Specific)	CO_2E mtpy
Renewable Portfolio Standard	Energy Use	6.2	356.38
AB 1109 Energy Efficiency Standards for Lighting (Residential and Commercial Indoor and Outdoor Lighting)	Energy Use	10 (residential) 9.3 (commercial	464.69 (residential) 100.45 (commercial)
Electricity Energy Efficiency (AB32)	Energy Use	5.9	339.14
Assembly Bill 1493: Pavley I	Transportation	9.3	2,023.70
Assembly Bill 1493: Pavley II	Transportation	1.3	282.88
Executive Order S-1-07 (Low Carbon Fuel Standard)	Transportations	7.4	1,610.26
Subtotal – Metric Tons of CO_2E Reduced			**5,177.50**

Project Mitigation Measures
Greenhouse Gas Emissions Reductions
(Metric Tons Per Year) (Phase 1 Interim 2020)

Measure	Sector	Percent Reduction from BAU (Sector Specific)	CO_2E mtpy
Require that a minimum of 25 percent of the total residential units constructed within the Specific Plan Area shall be powered primarily by solar energy.	Energy Use (Residential Only)	25.0	1,161.71
Construction of buildings that exceed minimum statewide energy requirements 15 percent beyond Title 24.	Energy Use	15.0	697.03
Provide shade (within 5 years) and/or use light-colored/high albedo materials (reflectance of at least 0.3) and/or open grid pavement for at least 30% of the site's nonroof impervious surfaces, including parking lots, walkways, plazas, etc.; OR place a minimum of 50% of parking spaces underground or covered by structured parking; OR use an open-grid pavement system (less than 50%	Energy Use (CAPCOA MM E-8)	1.0	57.48

impervious) for a minimum of 50% of the parking lot area. The mitigation measure reduces heat islands (thermal gradient differences between developed and undeveloped areas to minimize impact on microclimate and human and wildlife habitats. This measure requires the use of patented or copyright protected methodologies created by the ASTM. The SRI is a measure of the constructed surface's ability to reflect solar heat, as shown by a small rise in temperature. It is defined so that a standard black (reflectance 0.05, emittance 0.90) is "0" and a standard white (reflectance 0.80, emittance 0.90) is 100. To calculate SRI for a given material, obtain the reflectance value and emittance value for the material. SRI is calculated according to ASTM E 1980-01. Reflectance is measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance is measured according to ASTM E 408 or ASTM C 1371. Default values for some materials will be available in the LEED-NC v2.2 Reference Guide.			
Project will require a minimum of 25 percent of the total constructed residential units shall provide solar and/or tankless water heaters. Project will require a minimum of 50% of the total constructed residential units shall provide energy-efficient air conditioning systems.	Energy Use (Residential Only)	5.0	232.34
"Pass-By" Trips (Commercial Trips)	Transportation	13.53	2,944.16
Internal streets will have maximum speed limits which accommodate neighborhood electric vehicles (NEVs). Project will require installation of electric charging station(s) at the neighborhood commercial center.	Transportation	1.0	217.60
Designate multiple transit stops throughout the site in order to service future public transportation routes.	Transportations	1.0	217.60
Entire project is located within one-half mile of an existing/planned Class I or Class II bike lane and project design includes a comparable network that connects the project uses to the existing offsite facility. Project design includes a designated bicycle route connecting all units, onsite bicycle parking facilities, offsite bicycle facilities, site entrances, and primary building entrances to existing Class I or Class II bike lane(s) within one half mile. Bicycle route connects to all streets contiguous with project site. Bicycle route has minimum conflicts with automobile parking and circulation facilities. All streets internal to the project wider than 75 feet have Class II bicycle lanes on both sides.	Transportation (CAPCOA MM T-4)	0.625	136.00

Project is oriented towards existing transit, bicycle, or pedestrian corridor. Setback distance between project and existing or planned adjacent uses is minimized or nonexistent. Setback distance between different buildings on project site is minimized. Setbacks between project buildings and planned or existing sidewalks are minimized. Buildings are oriented towards existing or planned street frontage. Primary entrances to buildings are located along planned or existing public street frontage. Project provides bicycle access to any planned bicycle corridor(s). Project provides pedestrian access to any planned pedestrian corridor(s).	Transportation (CAPCOA MM D-2)	0.5	108.80
Increase water use efficiency and decrease water use demand through the following improvements: • Require a minimum of 90 percent of all non-turf planting areas in common areas and street right of ways to utilize drought tolerant and/or native plant materials. • Establish a maximum percentage of turf grass coverage in common and residential front yards for lots ¾ acre and larger (19 percent max) and less than ¾ acre (28 percent max). • Eliminate "non-functional" turf grass coverage allowed in recreation areas. • Provide a wastewater treatment system which reuses reclaimed water to irrigate common area and street right of way landscape. • Require micro-irrigation systems for watering of plants within common areas and street right of ways. • Implementation of Specific Plan Design Guidelines to strongly encourage incorporation of water saving features and technologies within residential and commercial buildings. • Provide community pool(s) at the community recreation areas within convenient distance from the majority of active adult homes to reduce the need for private pools at individual homes and thus decrease supplemental water requirements at individual lots. • Low flow faucets as well as high-efficiency toilets shall be installed in restrooms.	Water Use Related Emissions	15.0	121.71
• Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard). • Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers located in public areas. • Provide education and publicity about	Municipal Solid Waste Generation	5.0	53.75

reducing waste and available recycling services.			
Subtotal – Metric Tons of CO_2E Reduced			**5,948.18**

Total reduction in Metric Tons of CO2E = 11,125.68 Metric Tons of CO2E

Therefore the % reduction from BAU = (11,125.68÷35,324.25) x 100 = 31.50%

Existing and Proposed State Measures
Greenhouse Gas Emissions Reductions
(Metric Tons Per Year) (Phase 2 Buildout 2030)

Measure	Sector	Percent Reduction from BAU (Sector Specific)	CO_2E mtpy
Renewable Portfolio Standard	Energy Use	6.2	596.28
AB 1109 Energy Efficiency Standards for Lighting (Residential and Commercial Indoor and Outdoor Lighting)	Energy Use	10 (residential) 9.3 (commercial	850.19 (residential) 100.45 (commercial)
Electricity Energy Efficiency (AB32)	Energy Use	5.9	567.42
Assembly Bill 1493: Pavley I	Transportation	9.3	3,101.48
Assembly Bill 1493: Pavley II	Transportation	1.3	433.54
Executive Order S-1-07 (Low Carbon Fuel Standard)	Transportations	7.4	2,467.85
Subtotal – Metric Tons of CO_2E Reduced			**8,117.21**

Project Mitigation Measures
Greenhouse Gas Emissions Reductions
(Metric Tons Per Year) (Phase 2 Buildout 2030)

Measure	Sector	Percent Reduction from BAU (Sector Specific)	CO_2E mtpy
Require that a minimum of 25 percent of the total residential units constructed within the Specific Plan Area shall be powered primarily by solar energy.	Energy Use (Residential Only)	25.0	2,125.49
Construction of buildings that exceed minimum statewide energy requirements 15 percent beyond Title 24.	Energy Use	15.0	1,442.60
Provide shade (within 5 years) and/or use light-colored/high albedo materials (reflectance of at least 0.3) and/or open grid pavement for at least 30% of the site's nonroof impervious surfaces, including parking lots, walkways, plazas, etc.; OR place a minimum of 50% of parking spaces underground or covered by structured parking; OR use an open-grid pavement system (less than 50%	Energy Use (CAPCOA MM E-8)	1.0	96.17

impervious) for a minimum of 50% of the parking lot area. The mitigation measure reduces heat islands (thermal gradient differences between developed and undeveloped areas to minimize impact on microclimate and human and wildlife habitats. This measure requires the use of patented or copyright protected methodologies created by the ASTM. The SRI is a measure of the constructed surface's ability to reflect solar heat, as shown by a small rise in temperature. It is defined so that a standard black (reflectance 0.05, emittance 0.90) is "0" and a standard white (reflectance 0.80, emittance 0.90) is 100. To calculate SRI for a given material, obtain the reflectance value and emittance value for the material. SRI is calculated according to ASTM E 1980-01. Reflectance is measured according to ASTM E 903, ASTM E 1918, or ASTM C 1549. Emittance is measured according to ASTM E 408 or ASTM C 1371. Default values for some materials will be available in the LEED-NC v2.2 Reference Guide.			
Project will require a minimum of 25 percent of the total constructed residential units shall provide solar and/or tankless water heaters. Project will require a minimum of 50% of the total constructed residential units shall provide energy-efficient air conditioning systems.	Energy Use (Residential Only)	5.0	425.09
"Pass-By" Trips (Commercial Trips)	Transportation	10.0	3,334.93
Internal streets will have maximum speed limits which accommodate neighborhood electric vehicles (NEVs). Project will require installation of electric charging station(s) at the neighborhood commercial center.	Transportation	1.0	333.49
Designate multiple transit stops throughout the site in order to service future public transportation routes.	Transportations	1.0	333.49
Entire project is located within one-half mile of an existing/planned Class I or Class II bike lane and project design includes a comparable network that connects the project uses to the existing offsite facility. Project design includes a designated bicycle route connecting all units, onsite bicycle parking facilities, offsite bicycle facilities, site entrances, and primary building entrances to existing Class I or Class II bike lane(s) within one half mile. Bicycle route connects to all streets contiguous with project site. Bicycle route has minimum conflicts with automobile parking and circulation facilities. All streets internal to the project wider than 75 feet have Class II bicycle lanes on both sides.	Transportation (CAPCOA MM T-4)	0.625	208.43

Project is oriented towards existing transit, bicycle, or pedestrian corridor. Setback distance between project and existing or planned adjacent uses is minimized or nonexistent. Setback distance between different buildings on project site is minimized. Setbacks between project buildings and planned or existing sidewalks are minimized. Buildings are oriented towards existing or planned street frontage. Primary entrances to buildings are located along planned or existing public street frontage. Project provides bicycle access to any planned bicycle corridor(s). Project provides pedestrian access to any planned pedestrian corridor(s).	Transportation (CAPCOA MM D-2)	0.5	166.75
Increase water use efficiency and decrease water use demand through the following improvements: • Require a minimum of 90 percent of all non-turf planting areas in common areas and street right of ways to utilize drought tolerant and/or native plant materials. • Establish a maximum percentage of turf grass coverage in common and residential front yards for lots ¾ acre and larger (19 percent max) and less than ¾ acre (28 percent max). • Eliminate "non-functional" turf grass coverage allowed in recreation areas. • Provide a wastewater treatment system which reuses reclaimed water to irrigate common area and street right of way landscape. • Require micro-irrigation systems for watering of plants within common areas and street right of ways. • Implementation of Specific Plan Design Guidelines to strongly encourage incorporation of water saving features and technologies within residential and commercial buildings. • Provide community pool(s) at the community recreation areas within convenient distance from the majority of active adult homes to reduce the need for private pools at individual homes and thus decrease supplemental water requirements at individual lots. • Low flow faucets as well as high-efficiency toilets shall be installed in restrooms.	Water Use Related Emissions	15.0	221.71
• Reuse and recycle construction and demolition waste (including, but not limited to, soil, vegetation, concrete, lumber, metal, and cardboard). • Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers located in public areas. • Provide education and publicity about	Municipal Solid Waste Generation	5.0	92.92

reducing waste and available recycling services.			
Subtotal – Metric Tons of CO_2E Reduced			**8,781.07**

Total reduction in Metric Tons of CO2E = 16,898.28 Metric Tons of CO2E

Therefore the % reduction from BAU = (16,898.28÷56,251.42) x 100 = 30.04%